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To identify present and emerging farm occupations and necessary competencies, personal interviews were conducted by teachers of agriculture with a random sample of 329 farm operators in 11 selected counties in Kentucky. Slightly more than 75 percent of the operators interviewed were owners living on a farm. Some population characteristics were: (1) 49.2 percent of the operators managed 151 to 300 acres, (2) The median turnover of operator-owners was 20 years, and (3) 18 percent of the operators eompleted some education beyond high school and 8 percent completed 4 years of college. The relative importance of competencies was determined in the six subject matter areas of (1) animal science, (2) plant science, (3) farm business management and marketing, (4) agricultural mechanics, (5) farmstead buildings, fences, and water systems, and (6) soil and soil management. The most important areas of agricultural knowledge for farm operators and foremen were agricultural mechanics, and soil and soil management. The livestock herdsmen ranked animal science and agricultural mechanics as important areas of knowledge. (DM)

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EMPLOYMENT OPPORTUNITIES AND COMPETENCIES NEEDED IN FARM OCCUPATIONS IN SELECTED COUNTIES IN KENTUCKY

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March 1968

Department of Education
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EMPLOYMENT OPPORTUNITIES AND COMPETENCIES NEEDED IN FARM OCCUPATIONS IN SELECTED COUNTIES IN KENTUCKY

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March, 1968

PREFACE

This study identifies farm occupations and competencies for these occupations in an 11-county area. Data provided indicates employment opportunities and agricultural competencies needed by farm workers in present and emerging occupations in the selected Kentucky counties. Descriptive and background data will provide basic information from which course content for curriculum construction in farmer education may be determined.

Information for this study was secured by 13 vocational agriculture teachers in 11 counties from 329 farm operators. There are 3,810 farms in the population. The farms selected for this study were those above the 1964 average acreage size.

The agriculture subject matter areas include plant science, animal science, farm business management and marketing, agricultural mechanics, farmstead, building, fences and water systems, and soil and soil management. Knowledges, skills, and tools used were determined for each subject matter area. The competencies were recorded from the farm operators' reactions to indicate the degree of importance on a scale of necessary, desirable, and not necessary. Competencies for effective work are identified.

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The study was a cooperative effort of staff members in the Kentucky Department of Education, Division of Vocational Agricultural Education, Vocational Agriculture teachers in the selected counties, and members of the staff of the Kentucky Research Coordinating Unit, College of Education, University of Kentucky, Lexington, Kentucky.

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TABLE OF CONTENTS

	Page
PREFACE	ii
ACKNOWLEDGMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	viii
CHAPTER	
I. INTRODUCTION	1
Statement of Problem and Objective of the Study	
Definition of Terms	
Related Research and Background Information	
II. PROCEDURE FOR CONDUCTING THE STUDY	7
General Design	
Population and Sample	
Instrument	
Data Collection	
III. DESCRIPTIVE AND BACKGROUND DATA	11
Farms in the Eleven-County Area	
Farm Operators in the Selected Counties	
Farm Employees on the Farms in the Survey	
Relative Importance of Competencies	
IV. SUMMARY	57

LIST OF TABLES

Table		Page
1.	Farm Acreage, Average Size of Farm, and Value of Farm Products Sold in the Eleven-County Area	12
2.	Economic Classes of Farms in the Eleven-County Area . .	13
3.	Land and Farms by Use of Farms in the Eleven-County Area	14
4.	Farms in the On-Farm Study in the Eleven-County Area. .	15
5.	Per Cent of the Farms in Each Unit	15
6.	Size of the Farm Units in Acres	16
7.	Farm Operators on Farms in the Eleven-County Area . . .	17
8.	Farm-Operator Households on Farms in the Eleven-County Area	17
9.	Farm Operator's Position on the Farms in the Sample . . .	18
10.	Age of the Farm Operators in the Study.	19
11.	Years the Operator Completed in School	19
12.	Number of Years the Operator Completed in High School Vocational Agriculture	20
13.	Number of Years the Operators Have Been in the Occupation of Farming	20
14.	Number of Years the Operator Has Been a Farm Operator .	21
15.	The Farm Operator's Outlook of the Future of Farming. . .	21
16.	Employees on the Farms (Full-Time Employed, More Than Half-Time, Less Than Half-Time, and Family Workers) . .	21
17.	Number Employed in the Job Titles.	22

LIST OF TABLES--Continued

Table		Page
18.	Number Employed Full Time and Part Time by Job Titles	23
19.	Estimated Job Title Turnover in Number of Years	24
20.	The Years of Formal Education Needed by Job Titles . .	25
21.	The Estimated Wages Per Year by 1973	25

LIST OF FIGURES

Figure — Page

1. Relative Importance of Knowledge and Skills in Animal Science for Eight Farm Occupations 34

2. Relative Importance of Knowledge and Skills in Plant Science for Eight Farm Occupations 34

3. Relative Importance of Knowledge and Skills in Farm Business Management and Marketing for Eight Farm Occupations 35

4. Relative Importance of Knowledge and Skills in Farmstead, Buildings, Fences, and Water Systems for Eight Farm Occupations 35

5. Relative Importance of Knowledge and Skills in Agriculture Mechanics for Eight Farm Occupations. 36

6. Relative Importance of Knowledge and Skills in Soil and Soil Management for Eight Farm Occupations 36

7. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Operator-Not Owner . 37

8. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Operator-Owner . . . 37

9. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Foreman 38

10. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Livestock Herdsman . 38

11. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Tobacco Producer. . . 39

12. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Agricultural Mechanic 39

13. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, Other Crop Producer . 40

LIST OF FIGURES--Continued

Figure | Page

14. Relative Importance of Knowledge and Skills in Each Subject Matter Area for the Job Title, General Farm Work Only 40

15A. Relative Importance of Competencies for the Job Title, Operator-Not Owner - Knowledge 41

15B. Relative Importance of Competencies for the Job Title, Operator-Not Owner - Skills 41

15C. Relative Importance Index of Tools Used by Operator-Not Owner 42

16A. Relative Importance of Competencies for the Job Title, Operator-Owner - Knowledge 43

16B. Relative Importance of Competencies for the Job Title, Operator-Owner - Skills. 43

16C. Relative Importance Index of Tools Used by Operator-Owner 44

17A. Relative Importance of Competencies for the Job Title, Foreman - Knowledge 45

17B. Relative Importance of Competencies for the Job Title, Foreman - Skills. 45

17C. Relative Importance Index of Tools Used by Foreman . . 46

18A. Relative Importance of Competencies for the Job Title, Livestock Herdsman - Knowledge 47

18B. Relative Importance of Competencies for the Job Title, Livestock Herdsman - Skills 47

18C. Relative Importance Index of Tools Used by Livestock Herdsman 48

19A. Relative Importance of Competencies for the Job Title, Tobacco Producer - Knowledge 49

19B. Relative Importance of Competencies for the Job Title, Tobacco Producer - Skills 49

LIST OF FIGURES--Continued

Figure		Page
19C.	Relative Importance Index of Tools Used by Tobacco Producer	50
20A.	Relative Importance of Competencies for the Job Title, Agriculture Mechanic - Knowledge	51
20B.	Relative Importance of Competencies for the Job Title, Agriculture Mechanics - Skills	51
20C.	Relative Importance Index of Tools Used by Agricultural Mechanics	52
21A.	Relative Importance of Competencies for the Job Title, Other Crop Producer - Knowledge	53
21B.	Relative Importance of Competencies for the Job Title, Other Crop Producer - Skills	53
21C.	Relative Importance Index of Tools Used by Other Crop Producer	54
22A.	Relative Importance of Competencies for the Job Title, General Farm Work Only - Knowledge	55
22B.	Relative Importance of Competencies for the Job Title, General Farm Work Only - Skills	55
22C.	Relative Importance Index of Tools Used by General Farm Work Only	56

CHAPTER I

INTRODUCTION

The performance of American agriculture has been outstanding. Farmers have helped make it possible for consumers to spend approximately 18 per cent of their income for food, the smallest proportion in any country.

The American-style technology applied to a mass scale around the world can provide food for the growth ahead. Recent projections of six billion people within 30 years have raised few fears.

Farm managers and other farm employees must be knowledgeable of the competencies necessary to successfully operate farm businesses. The extension specialists in agriculture economics project that the investments in farm business by 1975 in large farms with gross sales in excess of $10,000.00 annually will be $175,000.00. Farm managers must excel in farm business management and marketing. The farm production expenses make up more than 60 per cent of the gross income of the larger farm business. Approximately one-third of the most successful farmers market an estimated 82 per cent of the total output. This indicates a definite need for effective training of persons who will be the managers and other employees of the farm business in the future.

A look ahead at the next 10 years points the way to continued

rapid growth in farm size, capital investment, and productivity. The U. S. population increase to more than 235 million by 1980, and the increased foreign demand for foods and fiber directs our attention to the need for adequately trained farm employees.

The operators, managers, foremen, livestock herdsman, specialty crop producers, operators of farm machinery and equipment, and the general farm workers need to have the opportunity to keep abreast of competencies necessary to perform effectively in their occupations. Competent persons trained are needed to meet the domestic and foreign demands for food and fiber.

Problem

The problem in this study was to determine the employment opportunities and agricultural competencies needed by farm employees in present and emerging farm occupations in selected counties in Kentucky. A course of instruction may be developed from these findings to meet the demands of each employee or to determine competencies that are pertinent to an occupation.

Objective

The objective of the study was to secure, by personal interview with the farm operators in the selected counties, information that will identify the present and emerging farm occupations and competencies for each occupation.

Definition of Terms

Agriculture -- the term used to include farming and off-farm agricultural businesses.

Competencies -- characteristics and qualities which enable an individual to accomplish specific tasks.

Farm -- a unit of land that is operated as a unit and is designated as a farm in the county deed book. For this study farms that are above the 1964 U. S. Census of Agriculture mean acreage size for each county were included in the population.

Farm Occupations -- the job titles or farm occupations are operator-not owner, operator-owner, foreman, livestock herdsman, tobacco producer, agricultural mechanic, other crop producer, and general farm worker.

Farm Unit -- includes one or more farms that are managed by one operator.

Knowledge -- the understanding that is desirable for an employee to be effective in an occupation. This may be acquired from an authority, from personal experience, deductive reasoning, inductive reasoning, or in the scientific problem solving method.

Off-Farm Agricultural Business -- a business other than farming, ranching, or other production agriculture which needs one or more workers with significant knowledge, abilities, and/or skills in one or more of the primary areas of plant science, animal science, soil science,

or agricultural mechanics. The business is an agricultural business when the product(s) handled or service(s) provided is in the form in which it appears on the farm, ranch, or other production agricultural unit. This is the definition of an off-farm agricultural business study that is presently being conducted in Kentucky.

On-Farm -- is related to production agriculture and includes six subject matter areas - animal science; plant science; farm business management and marketing; agricultural mechanics; farmstead, buildings, fences, and water systems; and soil and soil management.

Operator -- the employer that is responsible for the farm business operation.

Population -- the population for this report includes the farms in the selected counties that are above the 1964 mean acreage size. The 1964 U. S. Census of Agriculture was the source of information used to determine the 1964 mean farm acreage size.

Sample -- thirteen per cent of the farms in each county were selected randomly.

Skills -- abilities acquired by observation, study, or experience in mental and/or physical performance basic to the mastery of work or activity.

Subject Matter Areas -- in this study they are animal science, plant science; farm business management and marketing; agricultural mechanics; farmstead, buildings, fences, and water system; and soil and soil management.

Tools Used -- the tools identified by farm operators that are necessary for performing occupational skills satisfactorily.

Basic Assumptions

Assumption I:

Farm operator can give an adequate description of competencies needed by the farm employees who are under his supervision.

Assumption II:

The list of competencies in the questionnaire that was determined after consultations with specialists at the University of Kentucky Colleges of Agricultural Education and Agriculture, and reviewed by farm management specialists, includes the essential knowledge and skills of farm employees.

Assumption III:

The summarization of data, relating to competencies, will indicate the major subject matter areas for instruction and will provide a more comprehensive list of knowledges, skills, and tools used.

Assumption IV:

That the sample is representative of the farm population, farm operators, and farm employees of farms that are above the mean acreage in each county.

Related Research and Background Information

A review of publications from the University of Kentucky, College of Agriculture, that are related to the problem of this study does not provide data on occupations and competencies of farm employees.

The summaries of Studies in Agricultural Education[1] was reviewed and supported the conclusion that these studies are not designed to assist in determining the farm occupations and occupational competencies of employees on the farms that are corporated in this study.

Research reports and other sources of information were reviewed and the conclusion is that data needed to assist in the solving of the problem of this study is not available. A large number of studies to determine the occupations and competencies in off-farm agricultural occupations are under way in many states to meet this need in vocational agriculture. The information needed for an on-farm occupation study for this area is not available.

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[1] U. S. Department of Health, Education, and Welfare, Summaries of Studies in Agricultural Education, (Supplement No. 16; Washington, D. C.: Superintendent of Documents, U. S. Government Printing Office, 1965).

CHAPTER II

PROCEDURE FOR CONDUCTING THE STUDY

General Design

The farms in the selected counties with acreages above the county mean that is reported in the 1964 U. S. Census of Agriculture average were secured by the teachers of agriculture in the respective counties from either a county tax commissioner's office a county Farm Bureau information list, or an Agricultural Stabilization and Conservation Service Office. The teachers of agriculture forwarded to the project director a list of the farms for each county and included the name of the owner of the farm, the acres in the farm, and the location of the farm. A 13 per cent random sample was taken. The farms designated by this sampling method were listed and given a project number. This list was returned to the interviewers with the name of the owner of the farm, the number of the farm, and the address of the owner of the farm.

The general methodology for this study was a field survey procedure. The interviewers were teachers of agriculture in the respective counties. Approximately two weeks before they made their first interviews, the group received instructions on techniques and procedures for making effective interviews. At this time the purpose of the study, the value of the study, and a detailed explanation of the questionnaire

was made. At the conclusion of this session for the interviewers, they were instructed to select two farm operators from the list provided and make the interviews. After making the two interviews, they forwarded their questionnaires to the project director. He reviewed the two questionnaires and returned them with suggestions on improving the recording of the information and on the use of the questionnaire. The recording data and the techniques used by the interviewers as described was an aid to standardizing the interviewing.

Population and Sample

Kentucky is divided into nine vocational agriculture districts. The West Kentucky District was selected by the staff in Agricultural Education. The primary reason that this district was selected is that it is an area of the state that makes a major contribution to the production of food and fiber and is representative of the farming in the state. The population of this study included the farms in the selected counties that are above the mean acreage size. The mean acreage size for each county was secured from the 1964 U. S. Census of Agriculture preliminary report. A list of the farms with acreages above the mean for the county were secured from either a county tax commissioner's office, a county Farm Bureau information list, or the Agricultural Stabilization and Conservation Service office.

The interviewers forwarded this list of farms to the project director. Samples were selected using a randomly assorted digits table and

returned to the interviewers. This insured a representive sample. The number of farms in the population for the study is 3,810. The number of farms in the sample was 517. This was a 13 per cent sample.

Instrument

The instrument used in this study is presented in Exhibit A. Schedule A of this instrument was used to secure information of the farm, the farm operator, and the employees on the farm. Schedule B is designed to secure from the operator of the farm or farms pertinent data in each of the six subject matter areas. This portion of the instrument is designed to provide the interviewer the space to record the operators' relevant importance of each competency. The farm operators interviewed were given an opportunity to indicate the importance of each competency using the scale of necessary, desirable, and not necessary.

Data Collection

The interviewers forwarded the questionnaires to the project director soon after completing the interview. Each questionnaire was reviewed and appropriate code numbers were added for effective card punching. The cards were punched in the Kentucky Department of Education, Computer Service Division for data summarization. The summarization was completed by the Computer Service Division, University of Kentucky. Data from Schedule A was recorded in appropriate form for summarization. The information from Schedule B was used to calculate the relative importance scores. The relative importance

scores were recorded graphically for interpretation.

The data for this study was secured by teachers of agriculture, summarized by the project director, and are reported in this summary. The data is recorded in tables and figures for convenience.

CHAPTER III

DESCRIPTIVE AND BACKGROUND DATA

The data presented in this chapter in Tables 1, 2, 3, 7, and 8 is from the 1964 U. S. Census of Agriculture for the 11 counties and therefore represent the total population. Information in the remaining tables is data from the sample taken from the 11-county area. To extrapolate these sample tables to the farm population for the 11 counties a factor of 7.3 should be multiplied times the data for the sample presented.

An analysis of data in the 1964 U. S. Census of Agriculture reveals that the farms in this 11-county area range in average size from 125 to 303 acres and 1,982 of the 7,620 commercial farms are grouped in the Economic Classes I, II, and III. There are 3,810 farms included in the population of this study. A 13 per cent sample identified 517 farms.

The 329 farm operators interviewed manage from one to ten farms each, and 56 per cent operate more than one farm. Seventy-five per cent of operators interviewed are operator-owner living on the farm. The operators' ages range from 20 to 88, and 34 per cent have completed high school. Their occupational experience in farming indicates many years of on-the-job experience.

There are 693 employees in the 517 farms. The largest percentage is 64.1 per cent as operator. Small numbers were employed in

the other occupational areas except in the general farm worker group. Other information in the data available on employees is job turnover and formal education needed.

Farms in the Eleven-County Area

Table 1 represents 2,108,945 acres of farm land in the area and $79,456,749 is the value of farm products sold. The range of the average size of farm is 125.5 acres to 303.9 acres. Farms included in this study are above the mean acreage size for each county. The largest dollar value of farm products sold per farm is $15,308 and the lowest is $2,924. This indicates a wide range in types of farm businesses.

TABLE 1

FARM ACREAGE, AVERAGE SIZE OF FARM AND VALUE OF FARM PRODUCTS SOLD IN THE ELEVEN-COUNTY AREA[a]

County	Acres in Farms	Average Size of Farm	Farm Products Sold	
			All	Per Farm
Caldwell	155,311	164.5	$4,102,434	$4,346
Christian	339,466	205.4	13,631,203	8,246
Crittenden	150,410	199.2	2,207,941	2,924
Daviess	245,036	125.5	15,483,933	7,932
Henderson	241,642	212.9	10,328,150	9,100
Hopkins	189,326	176.8	4,596,348	4,292
McLean	128,014	146.8	5,019,533	5,756
Muhlenberg	140,684	143.7	3,061,867	3,128
Todd	198,183	190.7	7,961,967	7,663
Union	172,607	303.9	8,695,018	15,308
Webster	148,266	183.5	4,368,355	5,406
Totals	2,108,945	-----	$79,456,749	------

[a]U. S. Bureau of the Census and U. S. Department of Commerce, 1964 U. S. Census of Agriculture Preliminary Report, (Washington, D. C., 1966), p. 2.

Table 2 indicates 276 farms with sales of $40,000 or more. Seven per cent are Class II farms with sales of $20,000 to $39,999. There are 172 Class III farms with sales of $10,000 to $19,999 and the percentage is twenty-three in Class IV with sales of $5,000 to $9,999.

TABLE 2

ECONOMIC CLASSES OF FARMS IN THE ELEVEN-COUNTY AREA[a]

County	Total Commercial Farms	Farms by Economic Class (Sales)					
		I	II	III	IV	V	VI
Caldwell	585	5	16	63	137	209	155
Christian	1,249	46	117	206	324	347	209
Crittenden	385	1	9	34	80	113	148
Daviess	1,260	52	100	192	295	398	223
Henderson	884	54	151	169	197	185	88
Hopkins	566	11	27	76	130	137	185
McLean	617	10	32	79	184	201	111
Muhlenberg	521	3	15	45	88	177	193
Todd	770	25	75	117	161	241	151
Union	435	60	69	113	95	62	36
Webster	511	9	30	78	153	142	99
Totals	7,743	276	641	1,172	1,844	2,212	1,598

[a]Ibid., p. 2.

Table 3 indicates 34.7 per cent of total acres are in acres of cropland harvested and 21.7 per cent used for pasture; therefore, 43.6 percent is used for other crops that are less productive.

TABLE 3

LAND AND FARMS BY USE OF FARMS IN THE ELEVEN-COUNTY AREA[a]

County	Acres in Farms	Acres Cropland Harvested	Acres Used Only for Pasture
Caldwell	155,311	34,709	50,343
Christian	339,466	103,900	90,236
Crittenden	150,410	28,492	42,172
Daviess	245,036	109,895	48,984
Henderson	241,624	107,543	58,412
Hopkins	189,326	56,726	23,399
McLean	128,014	59,508	13,275
Muhlenberg	140,684	37,595	26,232
Todd	198,183	66,003	41,590
Union	172,607	76,935	34,617
Webster	148,266	51,109	29,270
Totals	2,108,927	732,415	458,530

[a]Ibid., p. 2.

As shown in Table 4, the total number of farms in the area that are above the mean acreage for each county is 3,810. The total number of commercial farms in the eleven-county area is 7,620. Thirty-four per cent of the land in this area is classified as harvested cropland.

The number of farms in the population is 3,810, and a 13 per cent random sample identified 517 of those farms for this study. A farm unit is one or more farms under the management of one operator. There are 329 farm units in the 517 farms in the sample.

TABLE 4

FARMS IN THE ON-FARM STUDY IN THE ELEVEN-COUNTY AREA

Item	Number
Number farms above average size (population)	3,810
Number farms in sample	517
Number farm units in sample	329

The largest number of farm operators interviewed as is shown in Table 5 operate one farm; however, 26.7 per cent operate two farms and 11 per cent operate three farms. Nineteen per cent are operating more than three farms.

TABLE 5

PER CENT OF THE FARMS IN EACH UNIT

Size of Unit	Per Cent
One farm	42.8
Two farms	26.7
Three farms	11.0
Four farms	06.2
Five farms	04.8
Six farms	02.3
Seven farms	02.7
Eight farms	.013
Ten farms	.019

As recorded in Table 6, 49.2 per cent of the operators manage 151 to 300 acres. Less than .6 per cent of the operators manage units smaller than 100 acres. Four per cent of the operators manage units over 1,000 acres.

TABLE 6

SIZE OF THE FARM UNITS IN ACRES

Acres	Number of Farms in this Range
50-100	2
101-150	16
151-200	50
201-250	58
251-300	54
301-350	30
351-400	20
401-450	17
451-500	15
501-550	10
551-600	8
601-650	7
651-700	2
701-750	7
751-800	5
801-850	4
851-900	3
901-1000	7
1001-1550	9
1501-1700	2
1701-1900	0
1901-4000	3

Farm Operators in the Selected Counties

Table 7 indicates 10,239 operators live on farms which they operate. This indicates a large per cent of owner-operators living on a farm. The average age range of operators for the counties is 50.6 years to 54.9 years.

TABLE 7

FARM OPERATORS ON FARMS IN THE ELEVEN-COUNTY AREA[a]

County	Owners		Managers	Average Age	Residing on Farm Operated
	Full	Part			
Caldwell	705	168	1	54.9	845
Christian	1,032	352	7	52.7	1,475
Crittenden	627	86	42	54.5	630
Daviess	1,056	477	6	50.7	1,650
Henderson	571	288	13	53.4	963
Hopkins	659	292	8	52.6	925
McLean	456	245	2	50.8	732
Muhlenberg	638	222	1	53.0	875
Todd	673	211	2	52.9	941
Union	305	160	--	50.6	491
Webster	465	228	3	53.2	712
Totals	7,187	2,729	85	----	10,239

[a]Ibid., p. 2.

Table 8 indicates 7,967 persons over 25 years of age completed the eighth grade, 5,447 graduated from high school, and 1,103 received college degrees. The age group with the largest number in the farm operators' household is in the block 20 to 54 years of age.

TABLE 8

FARM OPERATOR HOUSEHOLDS ON FARMS IN THE ELEVEN-COUNTY AREA[a]

County	By years of school completed; Total 25 years old and over			All persons in farm operators households		
	Elem. Years (8)	H.S. Years (4)	College Years (4)	10 19 yrs.	20 54 yrs.	55 and Over Years
Caldwell	644	454	72	537	1,085	931
Christian	990	650	239	1,078	2,164	1,465
Crittenden	670	328	75	416	861	673
Daviess	1,327	974	138	1,710	2,668	1,634

TABLE 8--Continued

County	By years of school completed: Total 25 years old and over			All persons in farm operators households		
	Elem. Years (8)	H. S. Years (4)	College Years (4)	10 19 yrs.	20 54 yrs.	55 and Over Years
Henderson	563	592	87	741	1,367	1,011
Hopkins	776	401	100	750	1,486	927
McLean	627	485	94	590	1,209	702
Muhlenberg	803	326	102	624	1,204	933
Todd	599	343	102	751	1,459	666
Union	253	436	52	511	759	507
Webster	625	458	42	426	864	816
Totals	7,967	5,447	1,103	8,144	15,126	10,265

[a]Ibid., p. 3.

Seventy-five per cent of farm operators are owners and 75 per cent of the operators live on the farm as recorded in Table 9. The survey includes 329 farm operators. It is significant that a large percentage of the operators are farm owners.

TABLE 9

FARM OPERATOR'S POSITION ON THE FARMS IN THE SAMPLE

Position	Number in Each Position	Per Cent
Owner living on farm	207	62.9
Not owner living on farm	47	14.3
Owner living off farm	42	12.8
Not owner living off farm	28	8.5
No response		1.5

Table 10 indicates 23 per cent of operators are under 40 years of age; 26 per cent are from 41 to 50 years of age; 28 per cent are from 51 to 60 years of age, and 22 per cent are over 61 years of age. The

wide age range and significant number in each age group indicates that operators interviewed represent many generations. The formal education, vocational training, and farming activities of operators enrich the data for this study.

TABLE 10

AGE OF THE FARM OPERATORS IN THE STUDY

Range of Ages	20-30	31-40	41-50	51-60	61-70	71-80	81-up
Operators in Each Range	26	50	86	93	46	17	3

No Response -- 8

As shown in Table 11, 27 per cent completed less than the ninth grade; 39 per cent less than the twelfth grade; and 34 per cent completed high school. Eight per cent completed four years of college.

TABLE 11

YEARS THE OPERATOR COMPLETED IN SCHOOL

Years Operators Completed in School	0-7	8	9	10	11	12	13	14	15	16	17
Number of Operators	18	71	14	18	9	112	12	13	3	22	6

No Response -- 31

The 202 under "none" is 61 per cent in Table 12. Twenty per cent have completed four years of Vocational Agriculture, and 29 per cent have had one, two, three or four years of Vocational Agriculture in high school. The information for Table 12 indicates the majority of operators have not had Vocational Agriculture in high school.

TABLE 12

NUMBER OF YEARS THE OPERATOR COMPLETED IN HIGH SCHOOL VOCATIONAL AGRICULTURE

Number Years Operators Completed in High School Vocational Agriculture	None	1	2	3	4	No Response
Number of Operators	202	6	17	6	67	31

The information in Table 13 indicates the largest number of operators have been in the occupation of farming from 21 to 30 years. Over 40 per cent have been in farming between 21 and 40 years. Table 13 indicates that the operators have had many years of experience in the occupation of farming. The median number of years the operators have been in farming is 27 years.

TABLE 13

NUMBER OF YEARS THE OPERATORS HAVE BEEN IN THE OCCUPATION OF FARMING

Years Operators Have Been Farming	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Number of Operators	38	69	75	58	39	12	5	2

No Response -- 21

Table 14 shows approximately 23 per cent of operators in each age group, 1 - 10 years, 11 - 20 years, and 21 - 30 years. Seventy per cent have been a farm operator from 1 to 30 years. A very small percentage of them have been farm operators for over 40 years.

This table also indicates the farmers interviewed have median number of 23 years as a farm operator. The median block is 21 - 30 years as a farm operator.

TABLE 14

NUMBER OF YEARS THE OPERATOR HAS BEEN A FARM OPERATOR

Years a Farm Operator	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Number Operators	77	76	76	42	23	2	1	1

No Response -- 31

The data summary which is shown in Table 15 indicates that 54 per cent have a good outlook for the future of farming and 79 per cent have a good or excellent outlook for the future of farming.

TABLE 15

THE FARM OPERATOR'S OUTLOOK OF THE FUTURE OF FARMING

Operator's Outlook of the Future of Farming	Excellent	Good	Poor	No Response
Number of Operators	83	179	36	31

Farm Employees on the Farms in the Survey

The total number of employees on the 517 farms in the survey is 693. This is an average of 1.34 employees per farm. Sixty-six per cent are employed full time.

TABLE 16

EMPLOYEES ON THE FARMS
(FULL-TIME EMPLOYED, MORE THAN HALF-TIME, LESS THAN HALF-TIME, AND FAMILY WORKERS)

Item	Number	Per Cent
Number employed full time (including operator)	459	66.2
Number employed more than one-half time	34	04.9
Number employed less than one-half time	114	16.4
Number family workers not included above	86	12.4
Total number employed on the farms	693	

Table 17 indicates 64 per cent of the employees are operators that are either owners or not-owners, and 45.6 per cent are owner-operators. The 22 foremen in this report and the 274 operators indicate the persons responsible for the management of the farms are approximately 70 per cent of the total number of employees.

TABLE 17

NUMBER EMPLOYED IN THE JOB TITLES

Job Title	Number with this Job Title	Per Cent
Operator-not Owner	79	18.5
Operator and Owner	195	45.6
Foreman	22	5.1
Livestock Herdsman	5	1.1
Tobacco Producer	12	2.8
Agricultural Mechanic	3	0.7
Other Crop Producer	15	3.5
General Farm Work Only	96	22.4
Total	427	

The total number employed full time one year ago is 370; the present number needed is 368; and the number of employees needed full time five years hence is 358.

The total number employed part time doesn't vary significantly.

TABLE 18

NUMBER EMPLOYED FULL TIME AND PART TIME BY JOB TITLES

Occupation or Job Titles	No. With This Title	Full Time			Part Time		
		One Year Ago	Present Number Needed	Five Years From Now	One Year Ago	Present Number Needed	Five Years From Now
Operator-not owner	79	65	63	72	2	2	1
Operator-owner	195	197	191	196	28	23	24
Foreman	22	21	20	19	1	1	1
Livestock Herdsman	5	5	4	4			
Tobacco Producer	12	10	10	10	10	10	9
Agricultural Mechanic	3	2	2	2	1	1	1
Other Crop Producer	15	13	14	2	12	2	2
General Farm Work Only	96	57	64	57	74	72	78

Table 19 indicates the median turnover for each job title of those responding to be:

1. Operator-not owner - 20 years
2. Operator-owner - 20 years
3. Foreman - 16 years
4. Livestock Herdsman - 19 years
5. Tobacco Producer - 4 years
6. Agricultural Mechanic - 25 years
7. Other Crop Producer - 6 years
8. General Farm Worker - 7 years

The operators' turnover is lowest and tobacco producers, other crop producers and general farm work is highest.

TABLE 19

ESTIMATED JOB TITLE TURNOVER IN NUMBER OF YEARS

Job Titles	Number Years Before Need of Replacement									No Response
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-up	
Operator-not owner		4	3	8	2	2	8		19	29
Operator-owner	5	15	5	21	10		12	2	56	69
Foreman		5		4	1		3	1	7	1
Livestock Herdsman		1		1			2		1	
Tobacco Producer	1	3			1				1	6
Agricultural Mechanic				1					2	
Other Crop Producer	1	3		2	1				1	7
General Farm Work Only	15	18	3	5	2				2	51

Calculations from data in Table 2- indicate the median for each job title to be:

1. Operator-not Owner - 12 years
2. Operator-owner - 12 years
3. Foreman - 12 years
4. Livestock Herdsman - 12 years
5. Tobacco Producer - 12 years
6. Agricultural Mechanic - 12 years
7. Other Crop Producer - 12 years
8. General Farm Worker - 12 years

A definite conclusion is that all occupations require a minimum of high

school education for successful and effective work in their job.

TABLE 20

THE YEARS OF FORMAL EDUCATION NEEDED BY JOB TITLES

Job Titles	Years Education Attainment Necessary										No Response
	1-7	8	9	10	11	12	13	14	15	16-up	
Operator-not Owner		2		2		37		4			34
Operator-owner	3	10	1	3	2	85		20		24	47
Foreman		1				11				5	5
Livestock Herdsman		1				2				1	1
Tobacco Producer						7					5
Agricultural Mechanic						3					
Other Crop Producer	1					8					6
General Farm Work Only	3		1	1		45					130

Table 21 indicates the largest number for operator-not owner in the $6,000 and the over $10,000 columns. The operator-owner title is largest in the over $10,000; however, the range from $1,000 to $8,000 is impressive. The approximate median for foreman is $5,000, and for general farm work is $4,000. The impressive conclusion from this data is the large number recorded in the over $10,000 area.

TABLE 21

THE ESTIMATED WAGES PER YEAR BY 1973

Job Titles	Salary by 1973 (1,000 Dollars)											
	Less Than 1	1	2	3	4	5	6	7	8	9	10	Over 10	No Response
Operator-not Owner		5	3	1		6	14	7	6	2		29	10
Operator-owner	1	10	12	11	15	23	21	21	18	1		43	19
Foreman		1	2	3	5	5	3	1	2			4	
Livestock Herdsman				2			1		1				1
Tobacco Producer	1	2				2	1						6
Mechanic (Mach. & Tool Care)					1	2							
Other Crop Producer		1		2	3	2	1						6
General Farm Work	2	7	5	10	17	8	3		2				142

Relative Importance of Competencies

Competency in this study was defined as the knowledge, ability, and/or skill applied to practical situations and the essential principles and techniques of a particular subject field. Schedule B of the instrument[1] has three divisions. The divisions are knowledge, skill, and tools used. Competencies for the subject matter areas were predetermined and listed in the questionnaire. In the knowledge area 68 understandings were listed for consideration in the six subject matter areas. In the skill area, 62 abilities were listed in the six subject matter areas. In the tool use area there was listed the major tools that a person employed in farming would use in performing the skills listed.

The relative importance of competencies was determined from the information that the 329 farm operators provided. The operators were asked to rate each of the competencies in the questionnaire either as necessary, desirable, or unnecessary.

In order to provide a basis for comparing the individual competencies that were included in the investigation, an index, which for the purposes of this study was called a "relative importance index", was calculated. The method for calculating the relative importance index consisted of counting the number of respondents who indicated that they

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[1] C. O. Neel, Employment Opportunities and Competencies Needed in Farm Occupations in Selected Counties in Kentucky, Appendix, March, 1968, pp.1 - 8.

considered the competency to be either necessary, desirable or not necessary for a particular job title. The number of necessary responses was multiplied by a factor of two, the number of desirable responses was multiplied by a factor of one, and the number of not necessary responses was multiplied by a factor of zero. The three products thus obtained were summed and divided by the number of respondents. This yielded an index of importance for a single competency. Within a subject matter area an average relative importance index for the combined knowledges within that subject matter area was determined. This was accomplished by summing the individual relative importance index for all knowledges within that subject matter area and dividing by the number of knowledge on the survey instrument for the subject matter area. The same process was repeated for skills and separately for tools used in each subject matter area.

In order to provide a comparison between the six subject matter areas for a given job title, an average relative importance index was determined for each of the six subject matter areas. This was done by summing the individual relative importance indices for all competencies within a given competency area and divided by the number competencies in that area.

Figure 1 through 6 present the relative importance of knowledge and skills in each of the subject matter areas for the eight farm occupations. The relative importance of the subject matter area to each job title was

calculated as described in the preceding paragraph. Several conclusions can be formulated from information recorded in the bar graph.

The subject matter area, Agricultural Mechanics, Figure 5, indicates a need for considerable effort in this area for a majority of the job titles. There are two job titles in the subject matter area that are considerably below the mean. They are livestock herdsman and general farm worker. Another interesting fact is that knowledge exceeds skills in all of the job title areas except Agricultural Mechanics and Other Crop Producer. Skill exceeds knowledge in relative importance for the job title Agricultural Mechanics. The subject matter area rating very close to the Agricultural Mechanics in relative importance is Soil and Soil Management. In Figure 6, knowledge exceeds skill for most of the job titles. The job titles in which skill exceeds knowledge are livestock herdsman and other crop producer. The subject matter areas rating the lowest in relative importance in the areas of knowledge and skill are Farm Business Management and Marketing (Figure 3) and Animal Science (Figure 1). In the Animal Science area, knowledge exceeds skills for all of the occupations. However, the relative importance for all the job areas in this subject matter area are low compared to the other five subject matter areas. In Farm Business Management and Marketing the relative importance is high in the occupational areas of operator-not owner, operator-owner, foreman, and livestock herdsman.

The mean score of the subject matter areas in the knowledge group is:

1. Agricultural Mechanics	-	1.56
2. Soil and Soil Management	-	1.44
3. Farmstead, Buildings, Fences, and Water Systems	-	1.26
4. Plant Science	-	1.15
5. Animal Science	-	1.09
6. Farm Business Management and Marketing	-	1.08

The mean relative importance for the subject matter areas in skill is:

1. Agricultural Mechanics	-	1.46
2. Farmstead, Buildings, Fences, and Water Systems	-	1.38
3. Plant Science	-	1.31
4. Soil and Soil Management	-	1.29
5. Farm Business Management and Marketing	-	1.05
6. Animal Science	-	1.00

Figure 1 indicates that Animal Science is the most important subject matter area in the occupational job training of operator-owner and livestock herdsman. The bar graphs further emphasize that second to these, and with near equal importance, is the operator-not owner and foreman. Animal science is of least importance in the occupational

training for the occupation of tobacco producer and crop producer.

The relative importance of knowledge and skills in the Plant Science subject matter area (Figure 2) are most important to and approximately equal in importance to each in the occupational areas of operator-not owner, operator-owner, tobacco producer, and other crop producer. This subject matter area is of least importance in the training for the occupation of livestock herdsman.

Figures 2, 3, 4, and 5 can be interpreted to provide information needed to determine the relative importance of these subject matter areas in each of the occupational areas.

Figures 7 through 14 indicate the relative importance of knowledge and skills in each subject matter area for the job titles. For example, Figure 7 reveals the importance of each subject matter area to the job title of operator-not owner. The most predominant observation from these charts and from this information is that we have three job titles that indicate a need for emphasis in each of the subject matter areas. These job titles are operator-not owner, operator-owner, and foreman. The second most evident inference is that there is considerable variation in the needs for training in specific subject matter areas for the other occupational job titles. The relative importance index for these job titles as shown by this information varies from zero to 1.8. There are, however, subject matter areas in these job titles that are relatively higher in importance. These subject matter areas are Agricultural

Mechanics, Farmstead, Buildings, Fences, and Water Systems, and Soil and Soil Management.

It appears from the data that a curricula could be developed to provide training for three job titles. The three job titles with subject matter indexes that are about equal are operator-not owner, operator-owner, and foreman. Training for jobs on farms in the occupational areas other than these three varies considerably. An example is that in the training of livestock herdsman, there is emphasis in Animal Science and little emphasis in the Plant Science Area. However, in the tobacco producer job title there is a definite need for Plant Science and little need for Animal Science. These two job titles do have similar needs. Courses should be designed to meet the indicated needs for people employed in the specific jobs.

Figure 7 shows that the operator-not owner needs training especially in Agricultural Mechanics, Plant Science, Farm Business Management and Marketing, and Soil and Soil Management. The other two subject matter areas are of less importance. However, they are very close to the mean for this area.

The relative importance indices in Figure 8 indicate for the operator-owner definite needs in training in the Animal Science and Agricultural Mechanics area. The data further indicates that in each of the other subject matter areas there is a definite need for this content, but not as great as in the others mentioned.

Figure 9 indicates that a person employed as foreman needs special training in the areas of Agricultural Mechanics and Soil and Soil Management. The Farmstead, Buildings, Fences, and Water Systems subject matter area is also important to the foreman. The other subject matter areas are less important and slightly below the mean.

Figure 10 illustrates that the livestock herdsman needs more learning opportunities in Animal Science, but the relative importance index is very close to the mean in the areas of Agricultural Mechanics, and Farmstead, Buildings, Fences, and Water System.

In Figure 11 for the job title of tobacco producer, we find that the subject matter area needs are first Agricultural Mechanics, second in Soil and Soil Management, and third in Plant Science. Very close to the mean for this job title is Farmstead, Buildings, Fences, and Water Systems.

Figure 12 indicates to us that the job title of Agricultural Mechanics has more variation in the needs of the subject matter areas than any other job title. Agricultural Mechanics, especially the skills in Agricultural Mechanics, is definitely needed along with the skills in the Farmstead, Buildings, Fences, and Water System area.

Figure 13 shows that in the job title of crop producer there are definite needs in the subject matter areas of Plant Science, Agricultural Mechanics, and Soil and Soil Management.

Figure 14 indicates to us in the job title of general farm worker

that they need the training in Plant Science, Soil and Soil Management, Farmstead, Buildings, Fences, and Water System.

Figures 1 through 6 provides the relative importance index for the knowledge and skill of each subject matter area for the job titles. Figures 7 through 14 present in bar graph design the value of knowledge and skill of each job title for the designated subject matter areas. Each figure reveals the knowledge and skill mean with a solid or broken line. The above information is on the following pages, 34 through 40.

Figures 15A through 22C present graphically the relative importance of competencies for each job title. Figure 15A, for example, includes the knowledge competencies, 15B the skill competencies, and 15C the relative importance of tools used. Each series of figures includes competencies for the six subject matter areas. These figures are on page 41 through page 56.

Fig. 1. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN ANIMAL SCIENCE FOR EIGHT FARM OCCUPATIONS

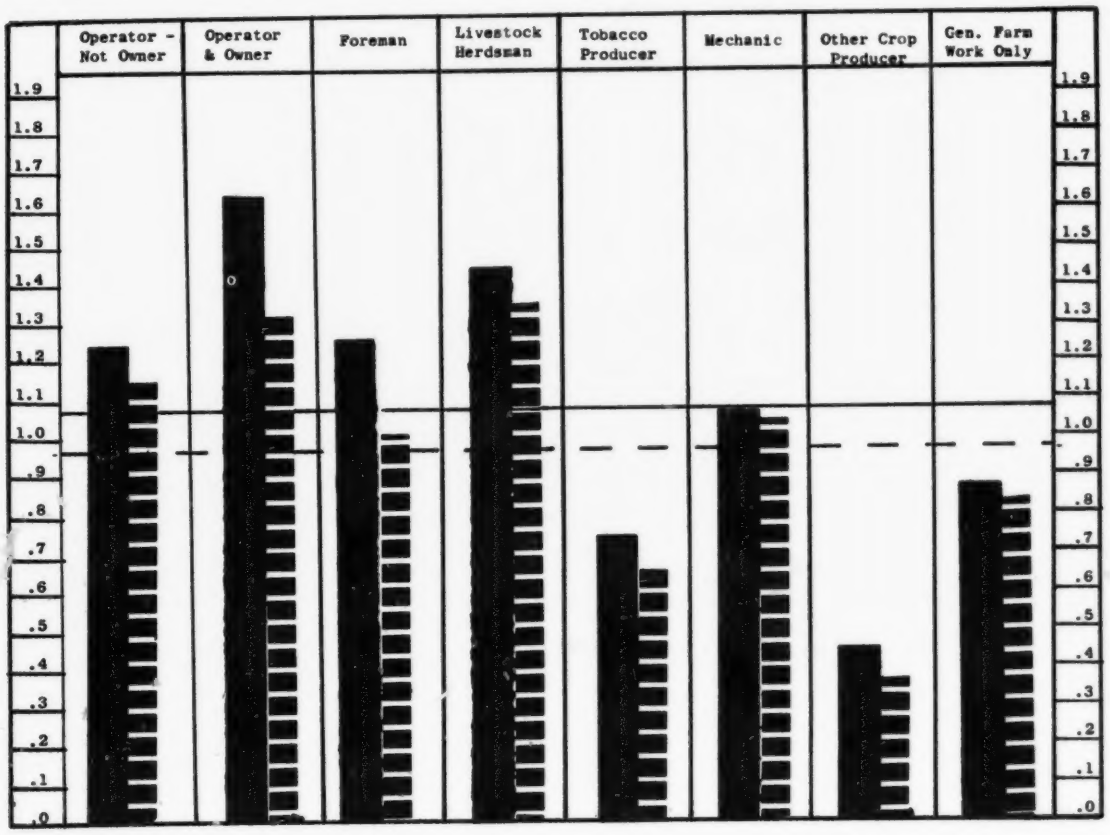


Fig. 2. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN PLANT SCIENCE FOR EIGHT FARM OCCUPATIONS

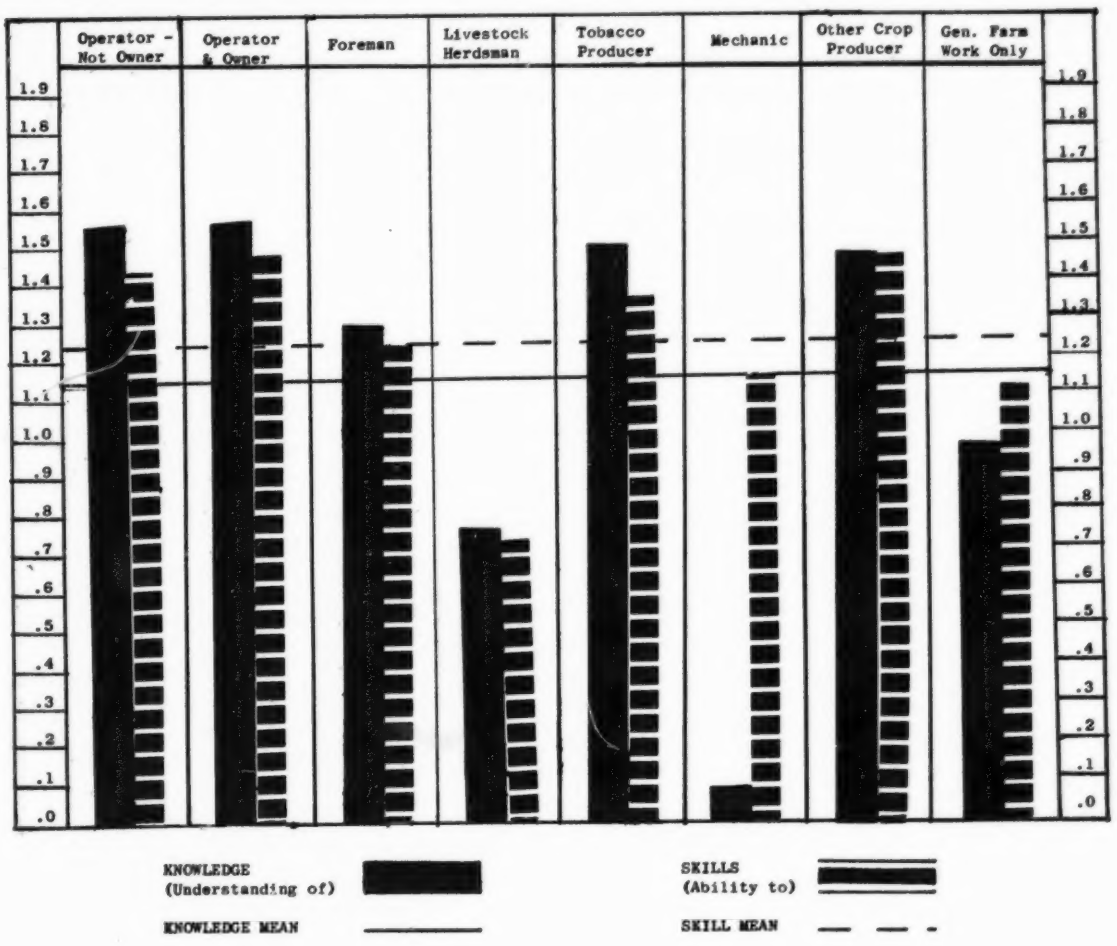


Fig. 3. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN FARM BUSINESS MANAGEMENT AND MARKETING

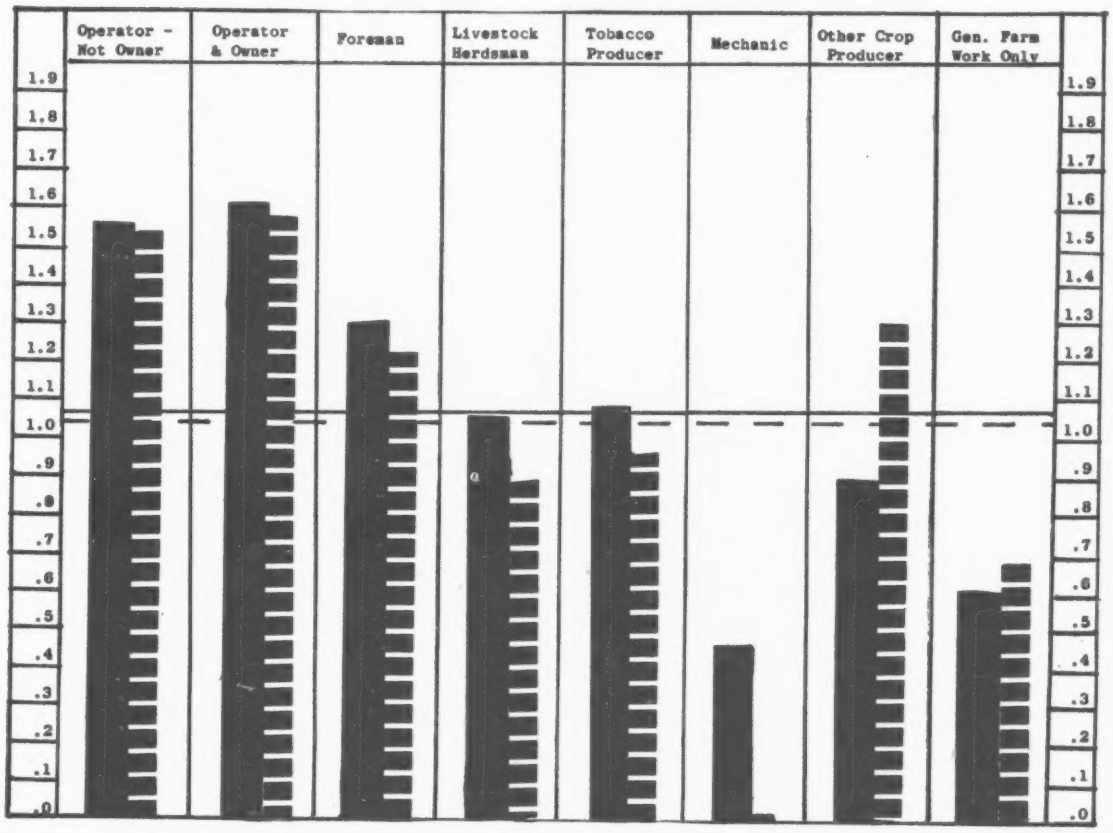


Fig. 4. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN FARMSTEAD, BUILDINGS, FENCES AND WATER SYSTEMS

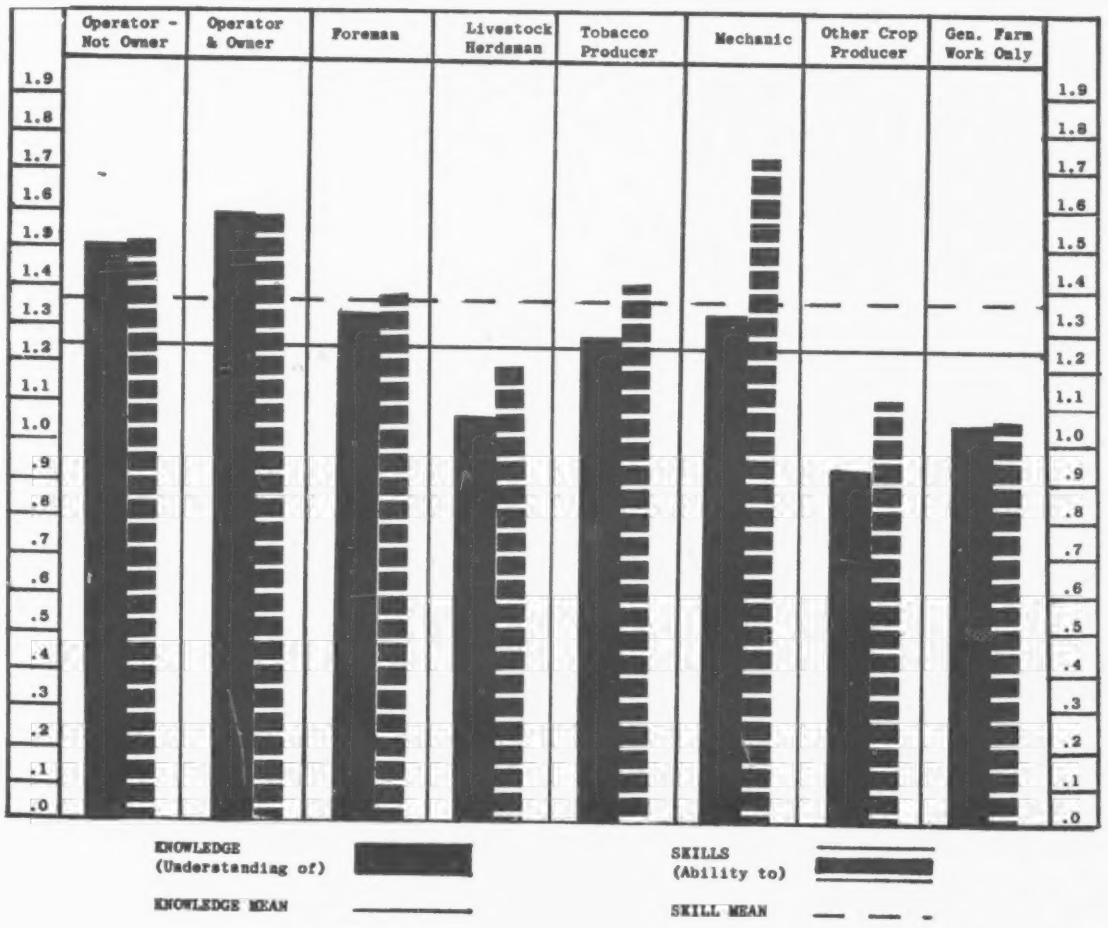


Fig. 5. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN AGRICULTURAL MECHANICS FOR EIGHT FARM OCCUPATIONS

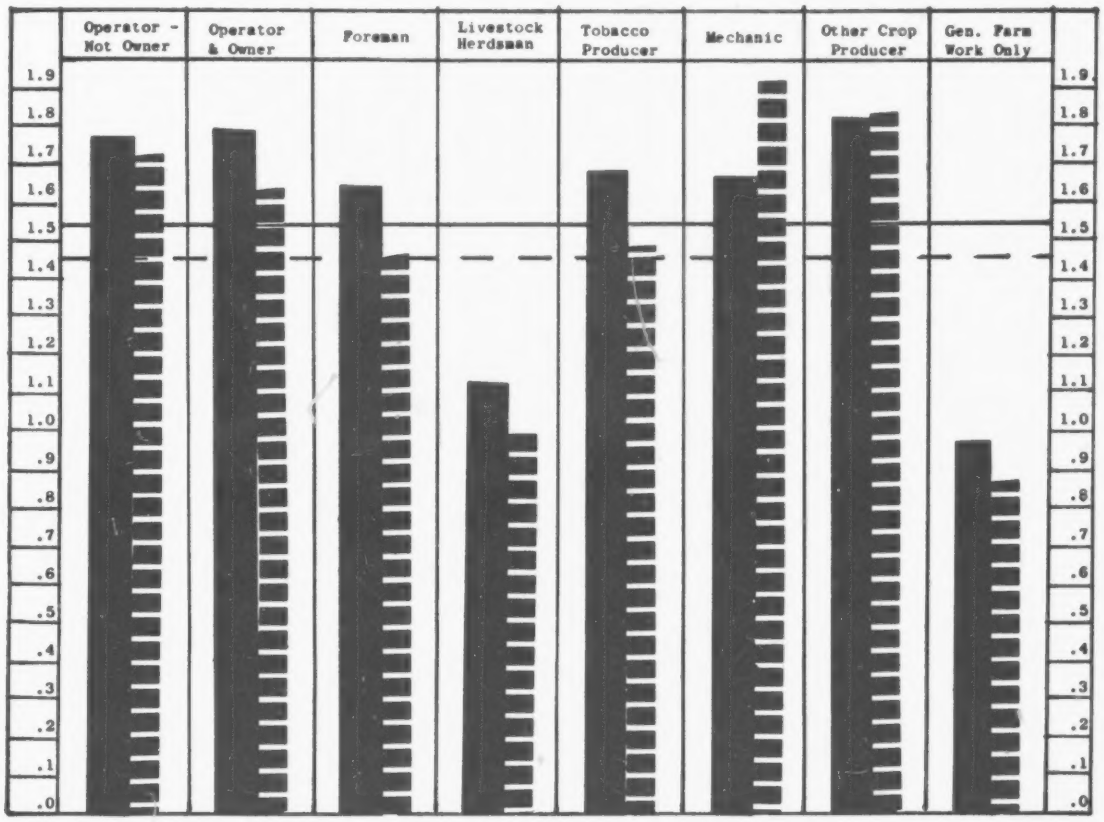


Fig. 6. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN SOIL AND SOIL MANAGEMENT FOR EIGHT FARM OCCUPATIONS

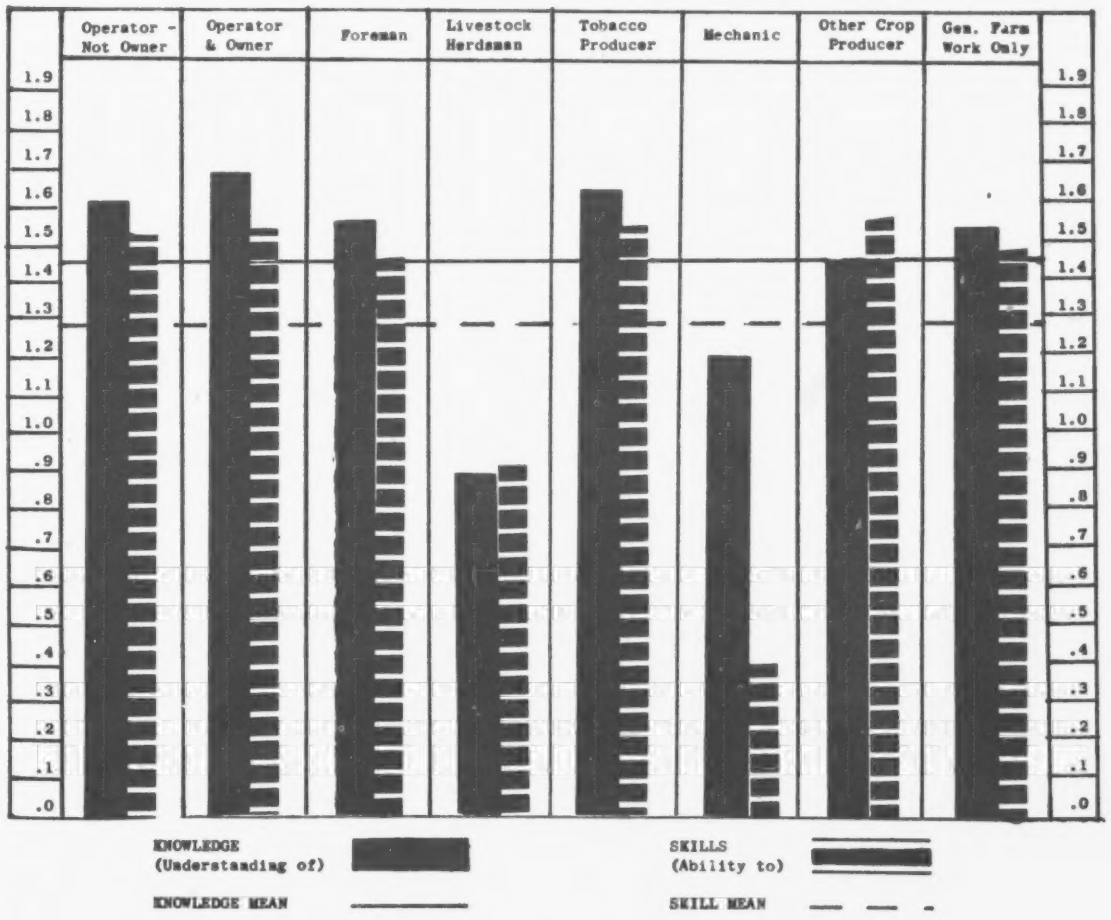


Fig. 7. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, OPERATOR - NOT OWNER

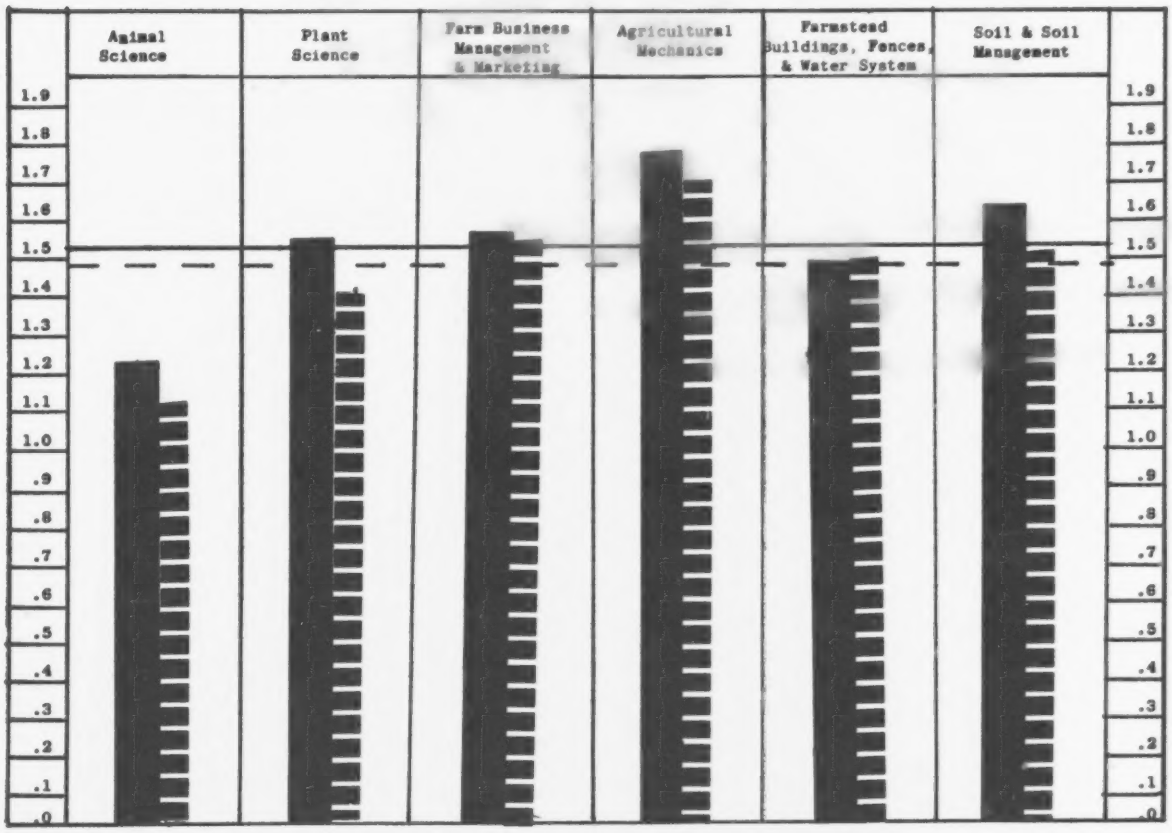


Fig. 8. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, OPERATOR - OWNER

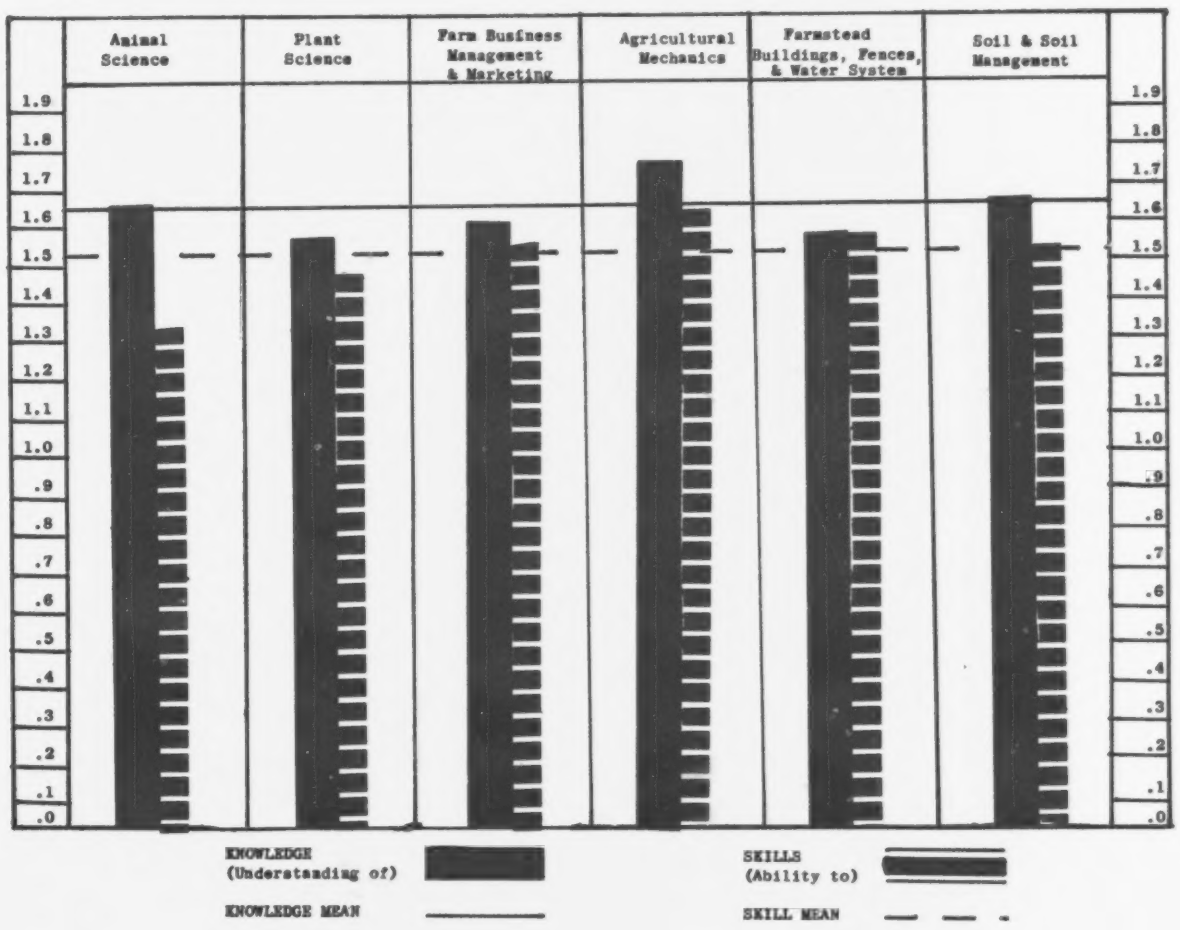


Fig. 9. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, FOREMAN

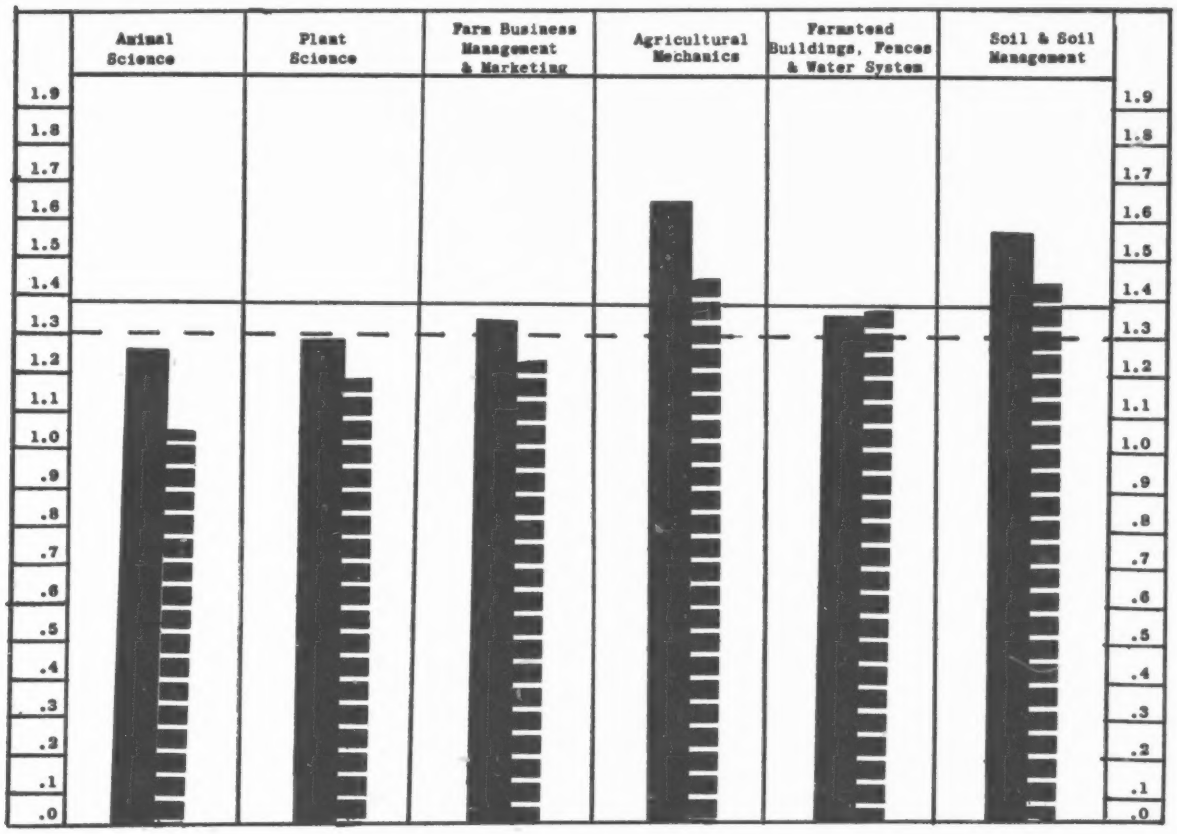


Fig. 10. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, LIVESTOCK HERDSMAN

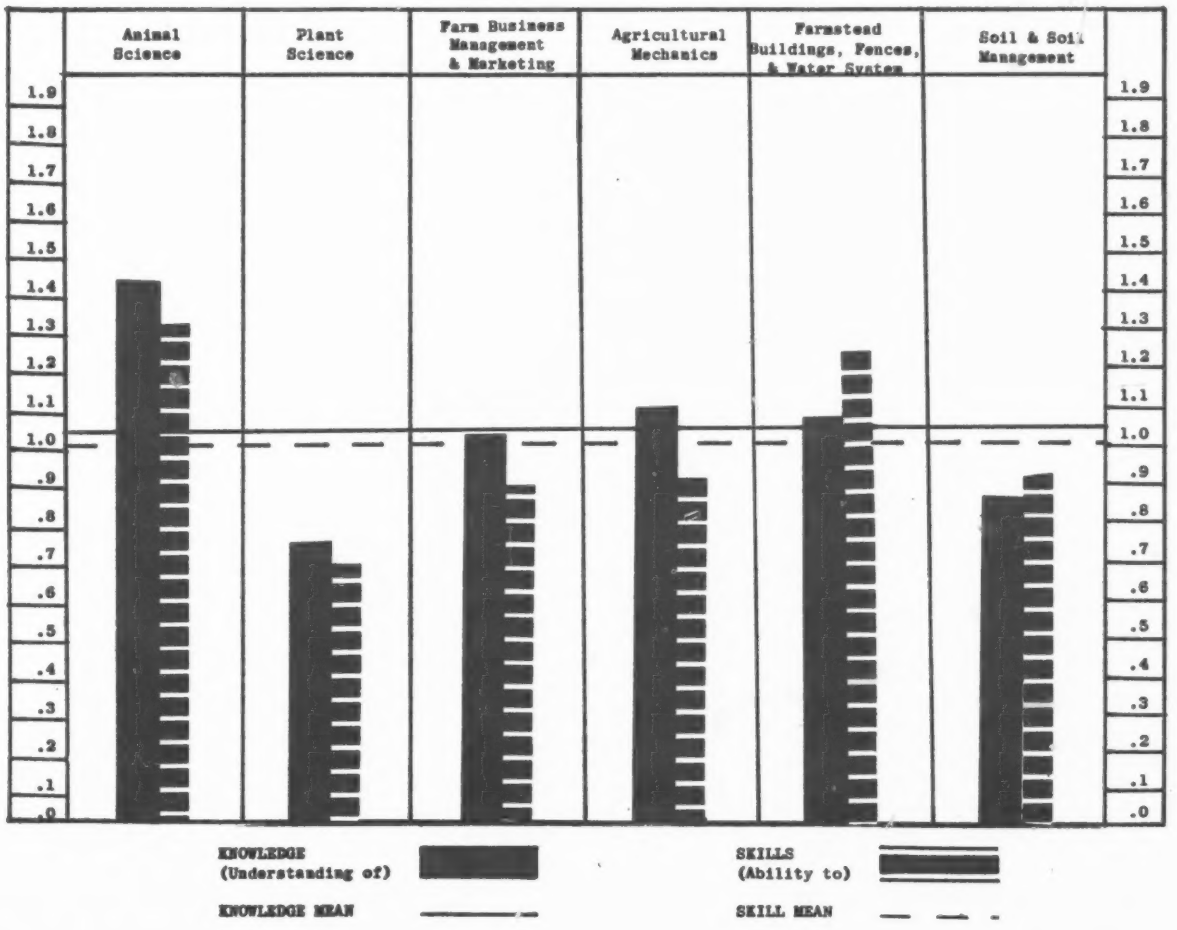


Fig. 11. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, TOBACCO PRODUCER

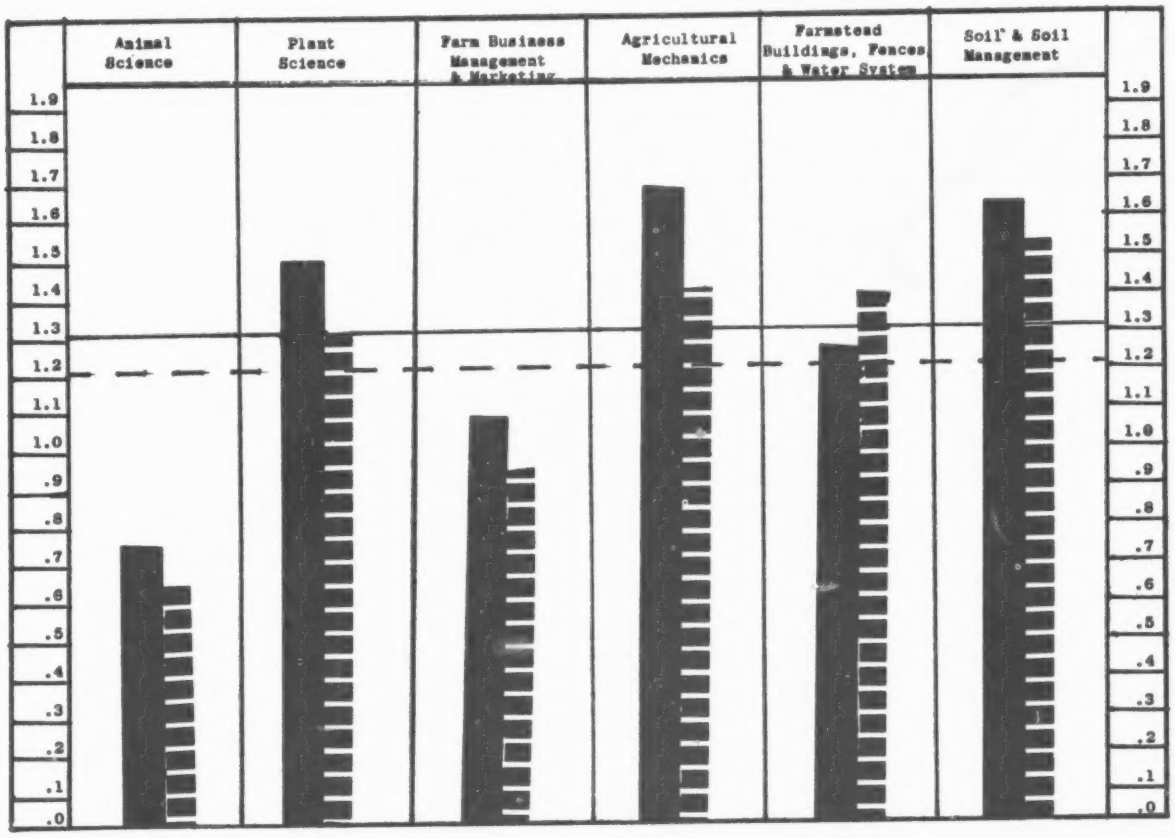


Fig. 12. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE, MECHANIC

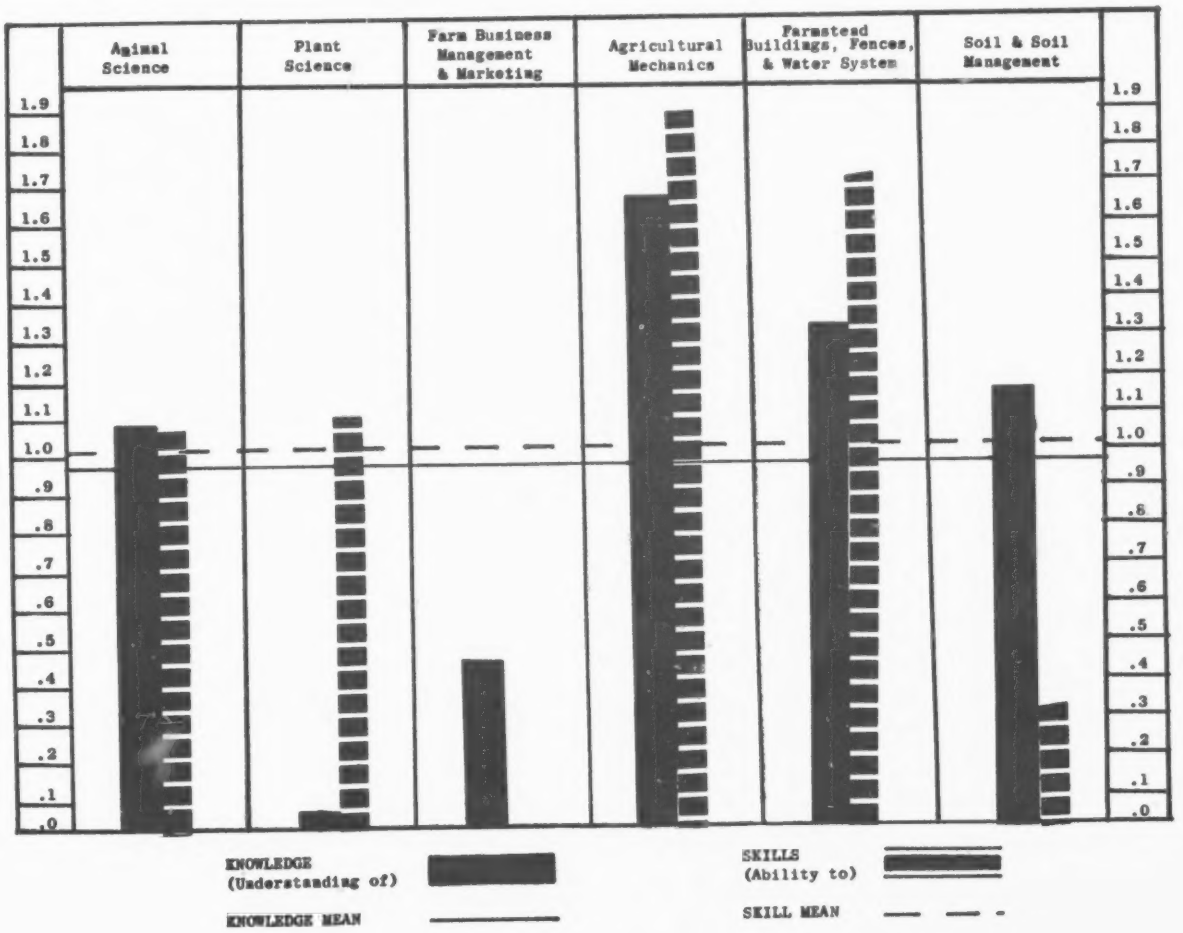


Fig. 13. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE,

OTHER CROP PRODUCER

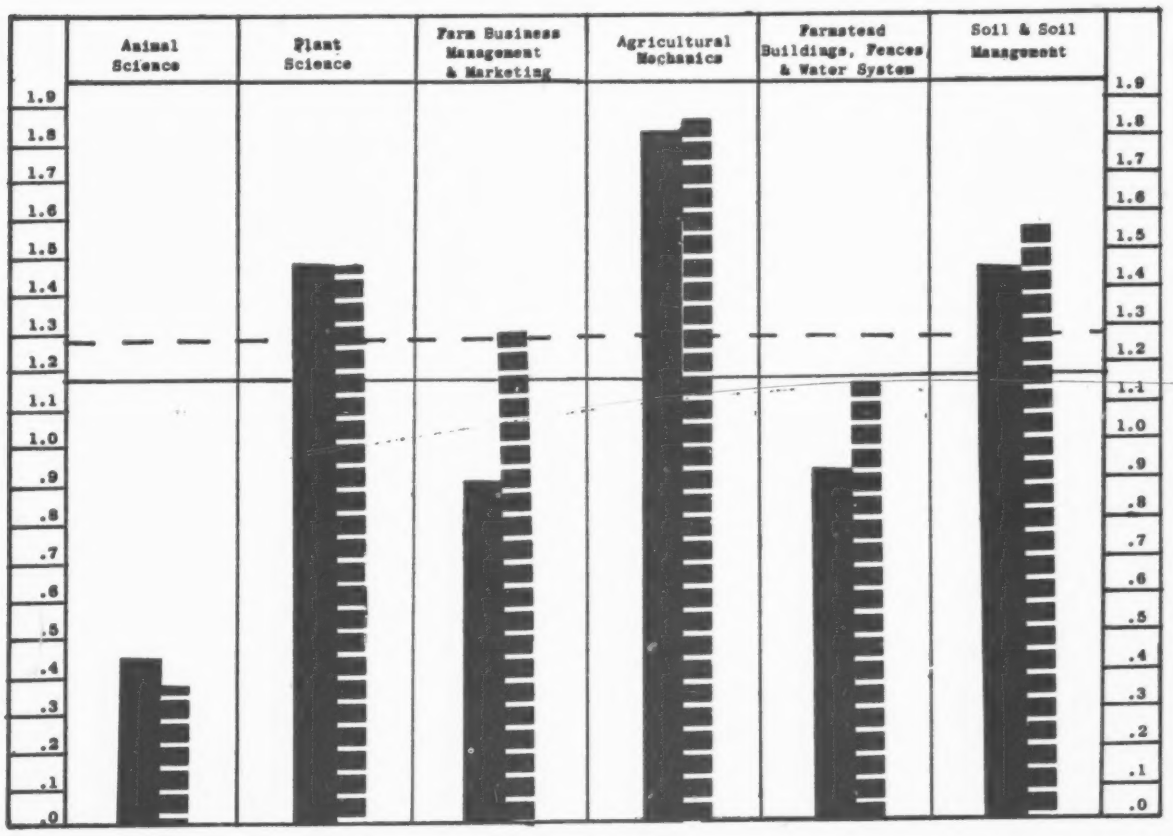
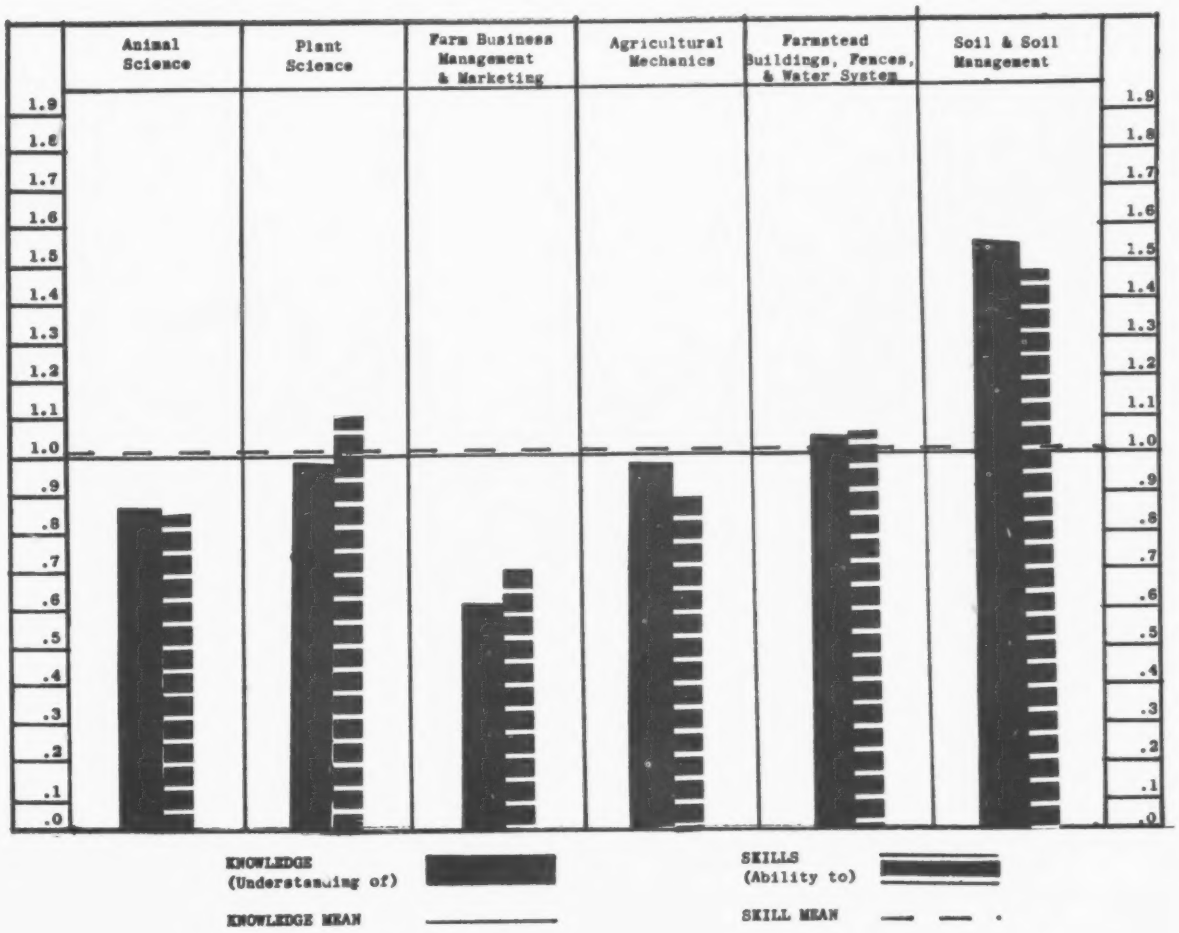


Fig. 14. -- RELATIVE IMPORTANCE OF KNOWLEDGE AND SKILLS IN EACH SUBJECT MATTER AREA FOR THE JOB TITLE,

GENERAL FARM WORK ONLY



RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

I. OPERATOR - NOT OWNER

Fig. 15A. -- KNOWLEDGE

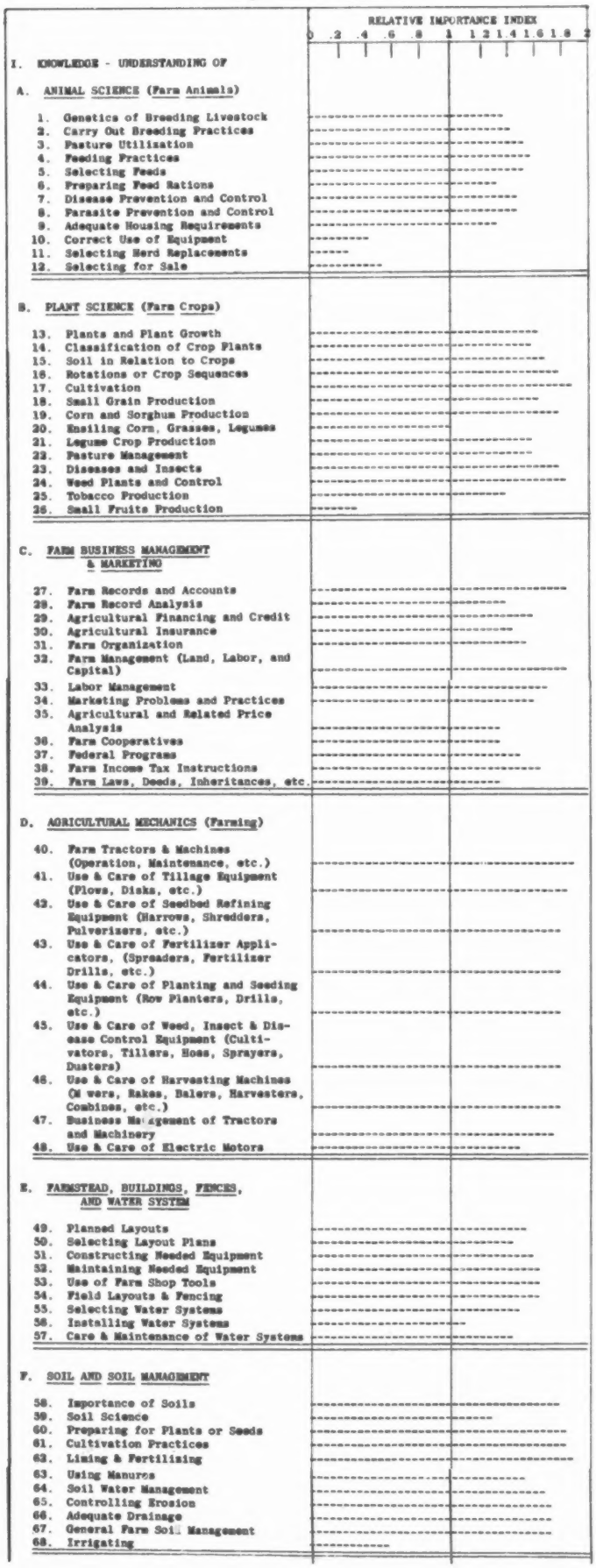

RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
I. KNOWLEDGE - UNDERSTANDING OF
A. ANIMAL SCIENCE (Farm Animals)
1. Genetics of Breeding Livestock
2. Carry Out Breeding Practices
3. Pasture Utilization
4. Feeding Practices
5. Selecting Feeds
6. Preparing Feed Rations
7. Disease Prevention and Control
8. Parasite Prevention and Control
9. Adequate Housing Requirements
10. Correct Use of Equipment
11. Selecting Herd Replacements
12. Selecting for Sale
B. PLANT SCIENCE (Farm Crops)
13. Plants and Plant Growth
14. Classification of Crop Plants
15. Soil in Relation to Crops
16. Rotations or Crop Sequences
17. Cultivation
18. Small Grain Production
19. Corn and Sorghum Production
20. Ensiling Corn, Grasses, Legumes
21. Legume Crop Production
22. Pasture Management
23. Diseases and Insects
24. Weed Plants and Control
25. Tobacco Production
26. Small Fruits Production
C. FARM BUSINESS MANAGEMENT & MARKETING
27. Farm Records and Accounts
28. Farm Record Analysis
29. Agricultural Financing and Credit
30. Agricultural Insurance
31. Farm Organization
32. Farm Management (Land, Labor, and Capital)
33. Labor Management
34. Marketing Problems and Practices
35. Agricultural and Related Price Analysis
36. Farm Cooperatives
37. Federal Programs
38. Farm Income Tax Instructions
39. Farm Laws, Deeds, Inheritances, etc.
D. AGRICULTURAL MECHANICS (Farming)
40. Farm Tractors & Machines (Operation, Maintenance, etc.)
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, etc.)
43. Use & Care of Fertilizer Applicators, (Spreaders, Fertilizer Drills, etc.)
44. Use & Care of Planting and Seeding Equipment (Row Planters, Drills, etc.)
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)
47. Business Management of Tractors and Machinery
48. Use & Care of Electric Motors
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
49. Planned Layouts
50. Selecting Layout Plans
51. Constructing Needed Equipment
52. Maintaining Needed Equipment
53. Use of Farm Shop Tools
54. Field Layouts & Fencing
55. Selecting Water Systems
56. Installing Water Systems
57. Care & Maintenance of Water Systems
F. SOIL AND SOIL MANAGEMENT
58. Importance of Soils
59. Soil Science
60. Preparing for Plants or Seeds
61. Cultivation Practices
62. Liming & Fertilizing
63. Using Manures
64. Soil Water Management
65. Controlling Erosion
66. Adequate Drainage
67. General Farm Soil Management
68. Irrigating

Fig. 15B. -- SKILLS

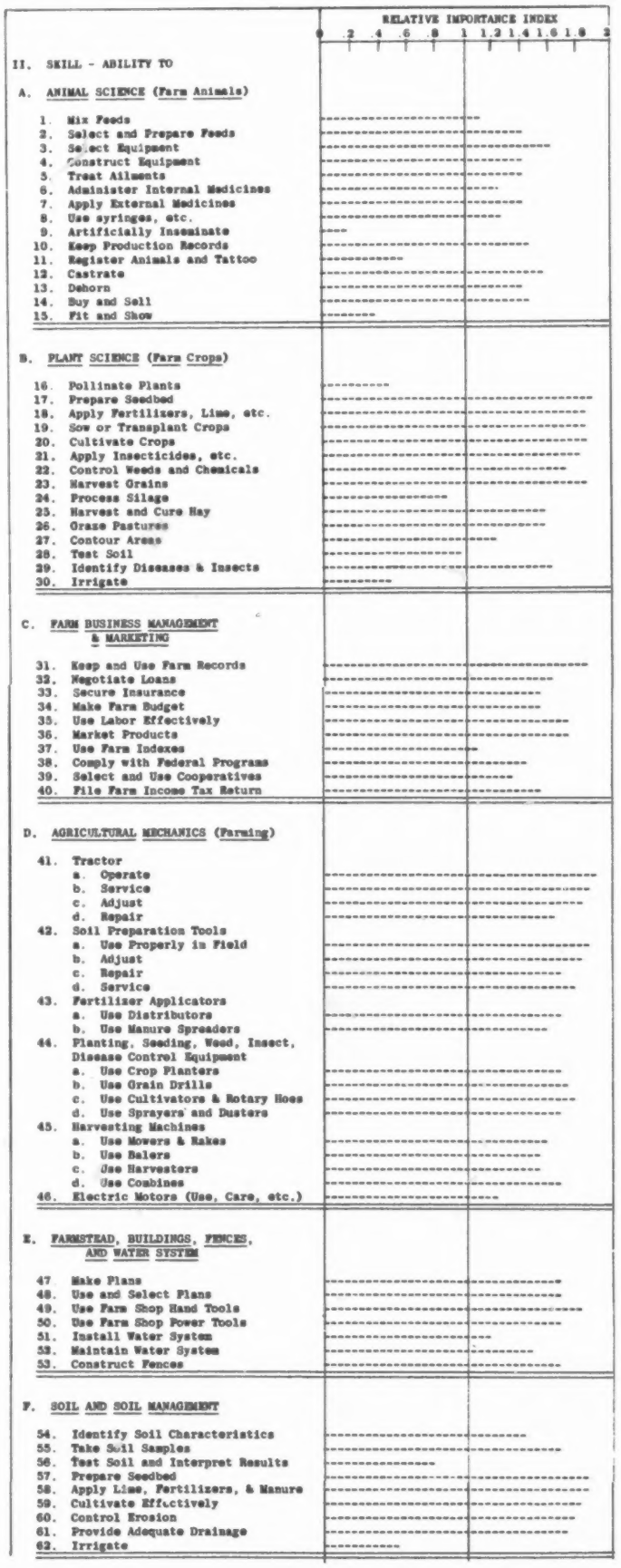
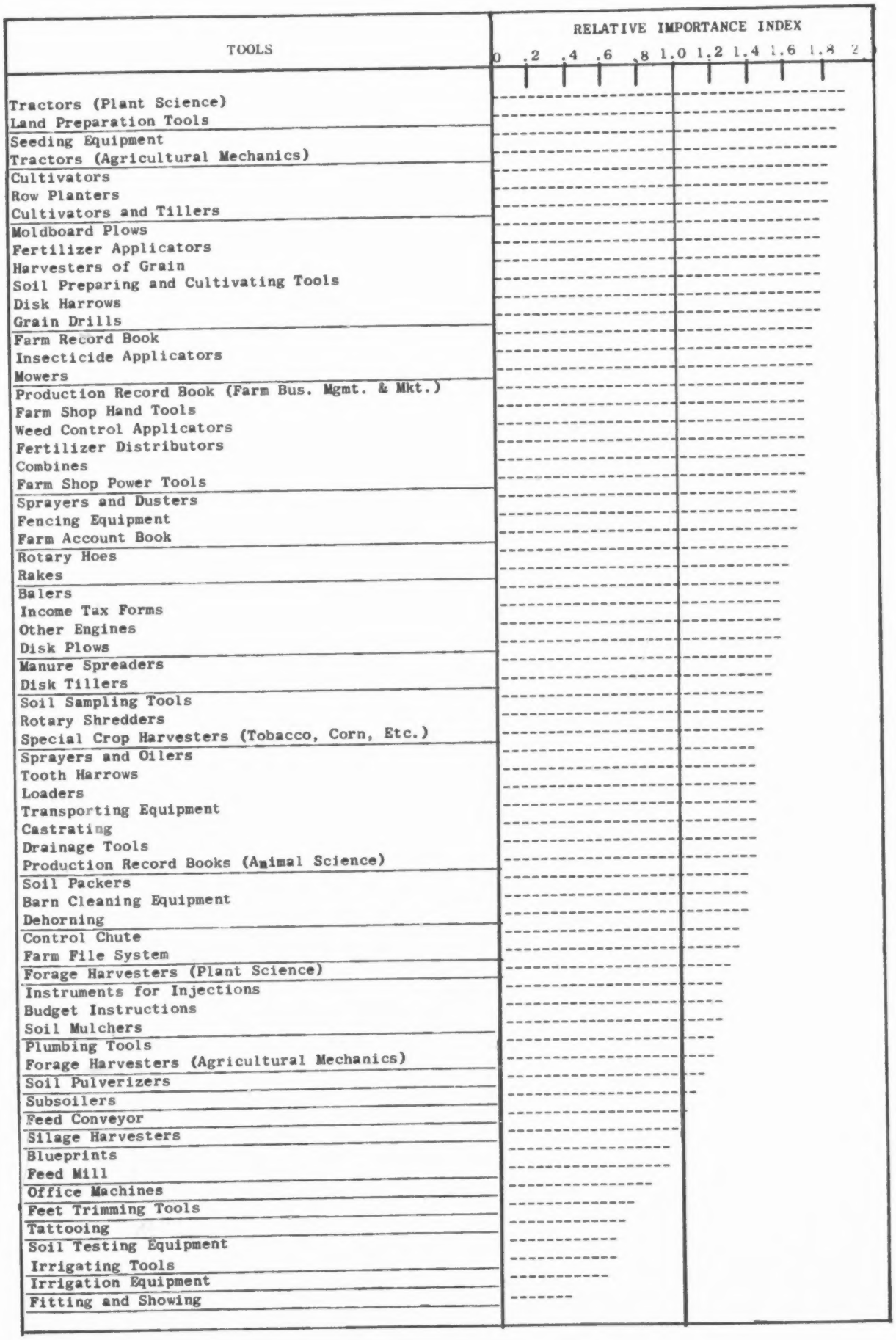

RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
II. SKILL - ABILITY TO
A. ANIMAL SCIENCE (Farm Animals)
1. Mix Feeds
2. Select and Prepare Feeds
3. Select Equipment
4. Construct Equipment
5. Treat Ailments
6. Administer Internal Medicines
7. Apply External Medicines
8. Use syringes, etc.
9. Artificially Inseminate
10. Keep Production Records
11. Register Animals and Tattoo
12. Castrate
13. Dehorn
14. Buy and Sell
15. Fit and Show
B. PLANT SCIENCE (Farm Crops)
16. Pollinate Plants
17. Prepare Seedbed
18. Apply Fertilizers, Lime, etc.
19. Sow or Transplant Crops
20. Cultivate Crops
21. Apply Insecticides, etc.
22. Control Weeds and Chemicals
23. Harvest Grains
24. Process Silage
25. Harvest and Cure Hay
26. Graze Pastures
27. Contour Areas
28. Test Soil
29. Identify Diseases & Insects
30. Irrigate
C. FARM BUSINESS MANAGEMENT & MARKETING
31. Keep and Use Farm Records
32. Negotiate Loans
33. Secure Insurance
34. Make Farm Budget
35. Use Labor Effectively
36. Market Products
37. Use Farm Indexes
38. Comply with Federal Programs
39. Select and Use Cooperatives
40. File Farm Income Tax Return
D. AGRICULTURAL MECHANICS (Farming)
41. Tractor
a. Operate
b. Service
c. Adjust
d. Repair
42. Soil Preparation Tools
a. Use Properly in Field
b. Adjust
c. Repair
d. Service
43. Fertilizer Applicators
a. Use Distributors
b. Use Manure Spreaders
44. Planting, Seeding, Weed, Insect, Disease Control Equipment
a. Use Crop Planters
b. Use Grain Drills
c. Use Cultivators & Rotary Hoes
d. Use Sprayers and Dusters
45. Harvesting Machines
a. Use Mowers & Rakes
b. Use Balers
c. Use Harvesters
d. Use Combines
46. Electric Motors (Use, Care, etc.)
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
47 Make Plans
48. Use and Select Plans
49. Use Farm Shop Hand Tools
50. Use Farm Shop Power Tools
51. Install Water System
52. Maintain Water System
53. Construct Fences
F. SOIL AND SOIL MANAGEMENT
54. Identify Soil Characteristics
55. Take Soil Samples
56. Test Soil and Interpret Results
57. Prepare Seedbed
58. Apply Lime, Fertilizers, & Manure
59. Cultivate Effectively
60. Control Erosion
61. Provide Adequate Drainage
62. Irrigate

Fig. 15C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

I. OPERATOR-NOT OWNER



RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

II. OPERATOR AND OWNER

Fig. 16A. -- KNOWLEDGE

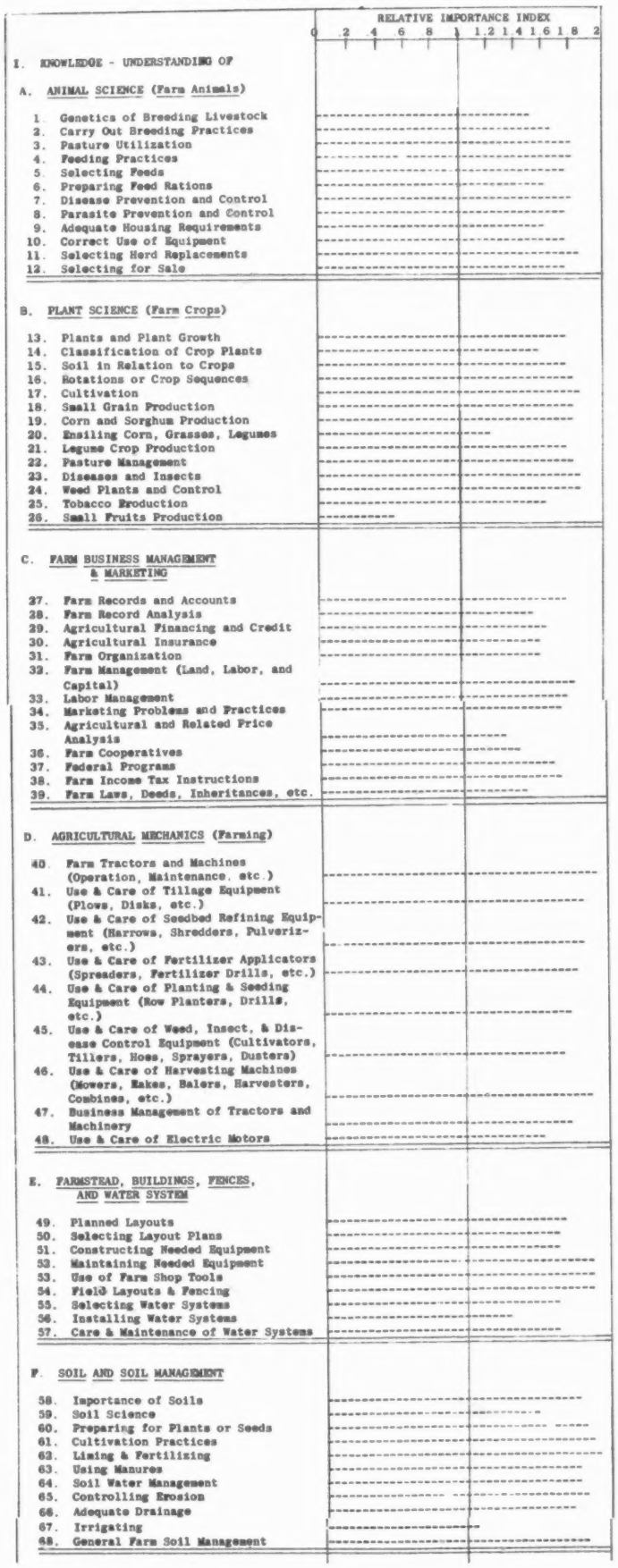

RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
I. KNOWLEDGE - UNDERSTANDING OF
A. ANIMAL SCIENCE (Farm Animals)
1. Genetics of Breeding Livestock
2. Carry Out Breeding Practices
3. Pasture Utilization
4. Feeding Practices
5. Selecting Feeds
6. Preparing Feed Rations
7. Disease Prevention and Control
8. Parasite Prevention and Control
9. Adequate Housing Requirements
10. Correct Use of Equipment
11. Selecting Herd Replacements
12. Selecting for Sale
B. PLANT SCIENCE (Farm Crops)
13. Plants and Plant Growth
14. Classification of Crop Plants
15. Soil in Relation to Crops
16. Rotations or Crop Sequences
17. Cultivation
18. Small Grain Production
19. Corn and Sorghum Production
20. Ensiling Corn, Grasses, Legumes
21. Legume Crop Production
22. Pasture Management
23. Diseases and Insects
24. Weed Plants and Control
25. Tobacco Production
26. Small Fruits Production
C. FARM BUSINESS MANAGEMENT & MARKETING
27. Farm Records and Accounts
28. Farm Record Analysis
29. Agricultural Financing and Credit
30. Agricultural Insurance
31. Farm Organization
32. Farm Management (Land, Labor, and Capital)
33. Labor Management
34. Marketing Problems and Practices
35. Agricultural and Related Price Analysis
36. Farm Cooperatives
37. Federal Programs
38. Farm Income Tax Instructions
39. Farm Laws, Deeds, Inheritances, etc.
D. AGRICULTURAL MECHANICS (Farming)
40. Farm Tractors and Machines (Operation, Maintenance, etc.)
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, etc.)
43. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, etc.)
44. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, etc.)
45. Use & Care of Weed, Insect, & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)
47. Business Management of Tractors and Machinery
48. Use & Care of Electric Motors
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
49. Planned Layouts
50. Selecting Layout Plans
51. Constructing Needed Equipment
52. Maintaining Needed Equipment
53. Use of Farm Shop Tools
54. Field Layouts & Fencing
55. Selecting Water Systems
56. Installing Water Systems
57. Care & Maintenance of Water Systems
F. SOIL AND SOIL MANAGEMENT
58. Importance of Soils
59. Soil Science
60. Preparing for Plants or Seeds
61. Cultivation Practices
62. Liming & Fertilizing
63. Using Manures
64. Soil Water Management
65. Controlling Erosion
66. Adequate Drainage
67. Irrigating
68. General Farm Soil Management

Fig. 16B. -- SKILLS

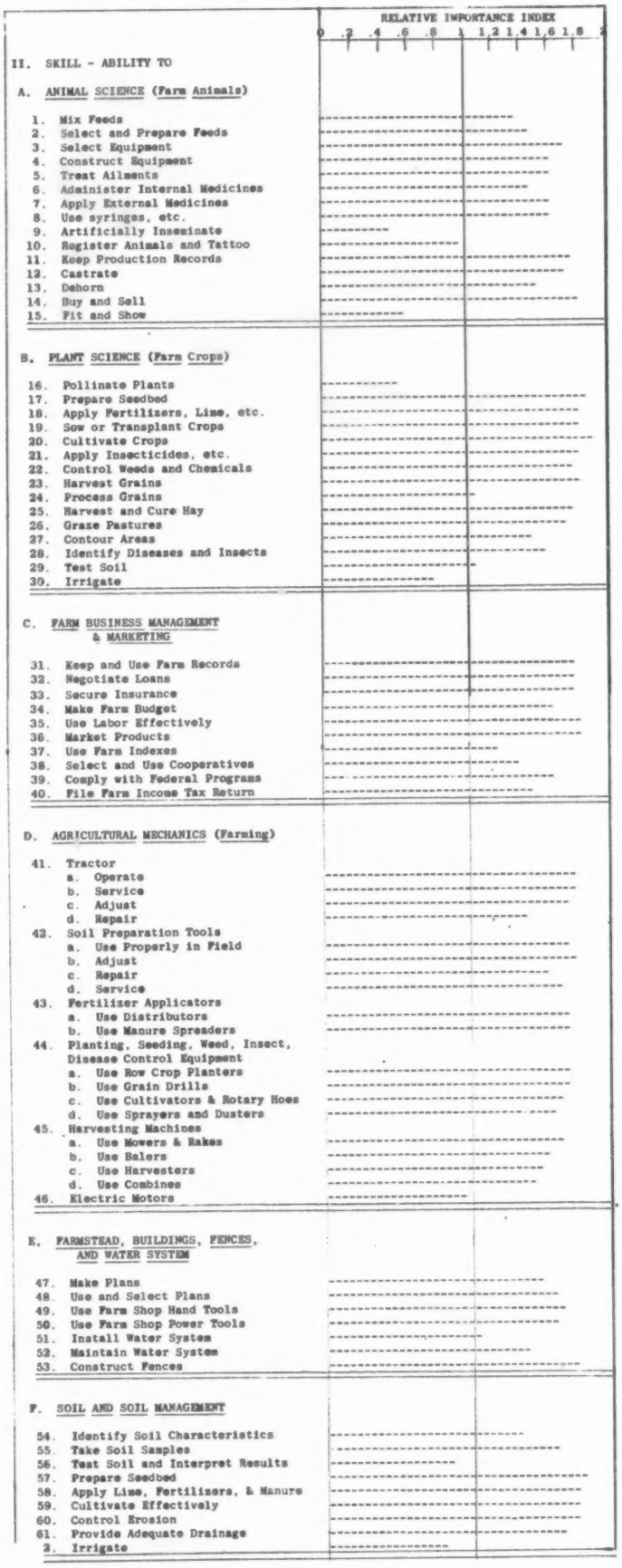


Fig. 16C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

II. OPERATOR-OWNER

TOOLS	RELATIVE IMPORTANCE INDEX 0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.
Tractors (Plant Science)	
Land Preparation Tools	
Farm Shop Hand Tools	
Seeding Equipment	
Farm Record Book	
Fencing Equipment	
Production Record (Farm Bus. Mgmt. & Mkt.)	
Soil Preparing and Cultivating Tools	
Tractors (Agricultural Mechanics)	
Cultivators	
Farm Shop Power Tools	
Income Tax Forms	
Mowers	
Harvesters of Grain	
Row Planters	
Grain Drills	
Production Record Books (Animal Science)	
Castrating	
Farm Account Book	
Moldboard Plows	
Disk Harrows	
Rakes	
Cultivators and Tillers	
Fertilizer Applicators	
Weed Control Applicators	
Insecticide Applicators	
Sprayers and Oilers	
Balers	
Control Chute	
Manure Spreaders	
Transporting Equipment	
Sprayers and Dusters	
Dehorning	
Barn Cleaning Equipment	
Fertilizer Distributors	
Instruments for Injections	
Combines	
Loaders	
Other Engines	
Rotary Hoes	
Soil Sampling Tools	
Forage Harvesters (Plant Science)	
Budget Instructions	
Feed Conveyor	
Disk Tillers	
Rotary Shredders	
Special Crop Harvesters (Tobacco, Corn, Etc.)	
Disk Plows	
Tooth Harrows	
Drainage Tools	
Farm File System	
Soil Packers	
Plumbing Tools	
Forage Harvesters (Agricultural Mechanics)	
Subsoilers	
Soil Pulverizers	
Blueprints	
Feed Mill	
Silage Harvesters	
Office Machines	
Soil Mulchers	
Tattooing	
Soil Testing Equipment	
Feet Trimming Tools	
Irrigating Tools	
Irrigation Equipment	
Fitting and Showing	

RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

III. FOREMAN

Fig. 17A. -- KNOWLEDGE

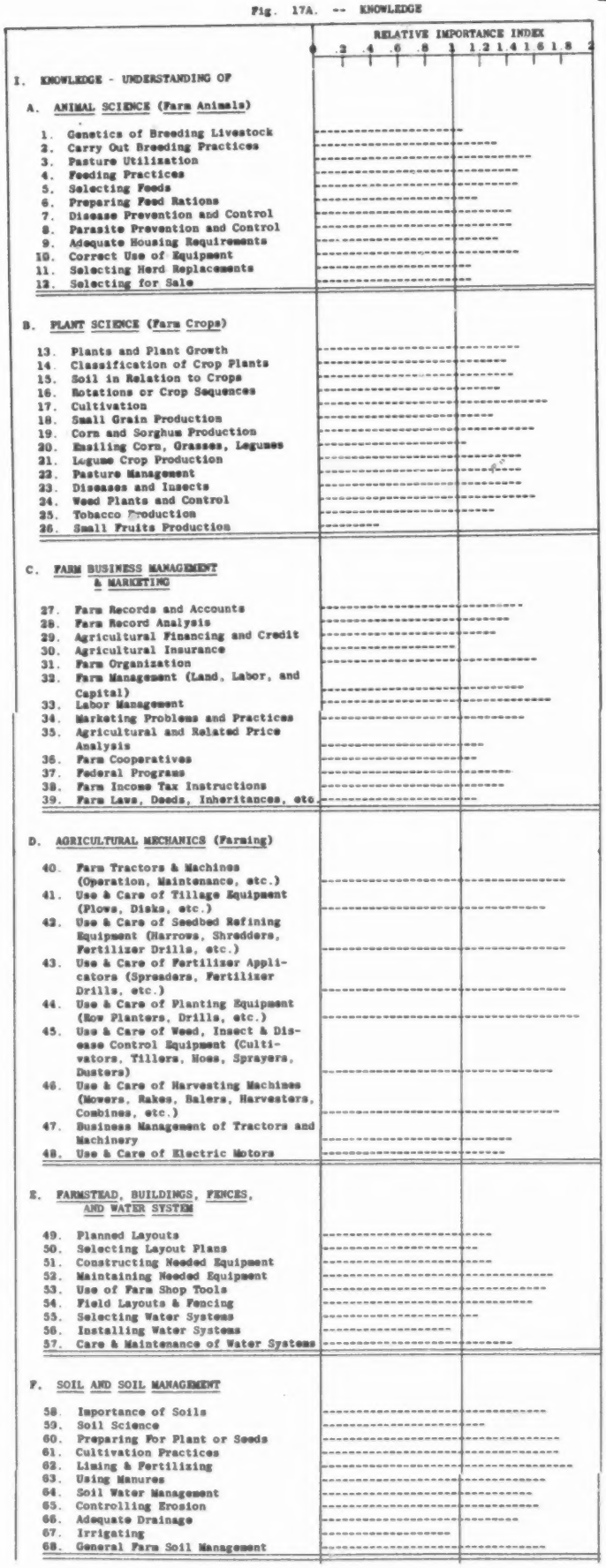
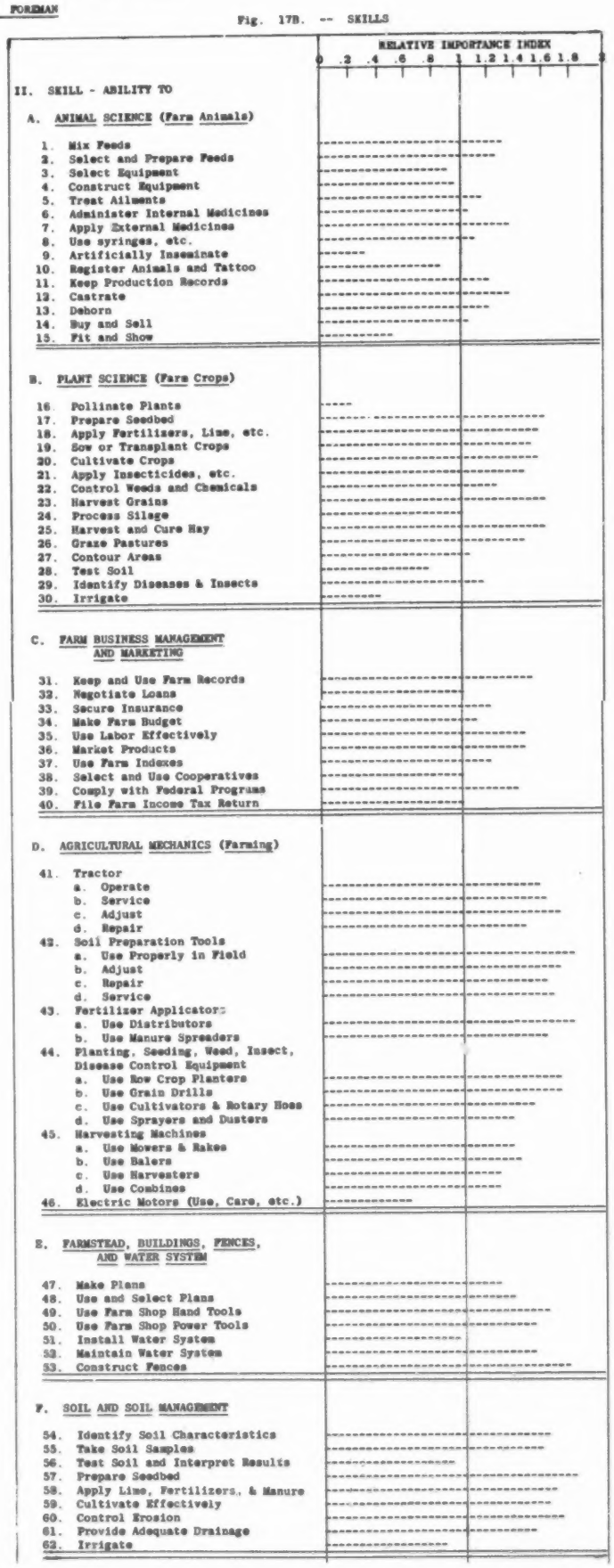

RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
I. KNOWLEDGE - UNDERSTANDING OF
A. ANIMAL SCIENCE (Farm Animals)
1. Genetics of Breeding Livestock
2. Carry Out Breeding Practices
3. Pasture Utilization
4. Feeding Practices
5. Selecting Feeds
6. Preparing Feed Rations
7. Disease Prevention and Control
8. Parasite Prevention and Control
9. Adequate Housing Requirements
10. Correct Use of Equipment
11. Selecting Herd Replacements
12. Selecting for Sale
B. PLANT SCIENCE (Farm Crops)
13. Plants and Plant Growth
14. Classification of Crop Plants
15. Soil in Relation to Crops
16. Rotations or Crop Sequences
17. Cultivation
18. Small Grain Production
19. Corn and Sorghum Production
20. Ensiling Corn, Grasses, Legumes
21. Legume Crop Production
22. Pasture Management
23. Diseases and Insects
24. Weed Plants and Control
25. Tobacco Production
26. Small Fruits Production
C. FARM BUSINESS MANAGEMENT & MARKETING
27. Farm Records and Accounts
28. Farm Record Analysis
29. Agricultural Financing and Credit
30. Agricultural Insurance
31. Farm Organization
32. Farm Management (Land, Labor, and Capital)
33. Labor Management
34. Marketing Problems and Practices
35. Agricultural and Related Price Analysis
36. Farm Cooperatives
37. Federal Programs
38. Farm Income Tax Instructions
39. Farm Laws, Deeds, Inheritances, etc
D. AGRICULTURAL MECHANICS (Farming)
40. Farm Tractors & Machines (Operation, Maintenance, etc.)
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Fertilizer Drills, etc.)
43. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, etc.)
44. Use & Care of Planting Equipment (Row Planters, Drills, etc.)
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)
47. Business Management of Tractors and Machinery
48. Use & Care of Electric Motors
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
49. Planned Layouts
50. Selecting Layout Plans
51. Constructing Needed Equipment
52. Maintaining Needed Equipment
53. Use of Farm Shop Tools
54. Field Layouts & Fencing
55. Selecting Water Systems
56. Installing Water Systems
57. Care & Maintenance of Water Systems
F. SOIL AND SOIL MANAGEMENT
58. Importance of Soils
59. Soil Science
60. Preparing For Plant or Seeds
61. Cultivation Practices
62. Liming & Fertilizing
63. Using Manures
64. Soil Water Management
65. Controlling Erosion
66. Adequate Drainage
67. Irrigating
68. General Farm Soil Management

Fig. 17B. -- SKILLS


RELATIVE IMPORTANCE INDEX
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II. SKILL - ABILITY TO
A. ANIMAL SCIENCE (Farm Animals)
1. Mix Feeds
2. Select and Prepare Feeds
3. Select Equipment
4. Construct Equipment
5. Treat Ailments
6. Administer Internal Medicines
7. Apply External Medicines
8. Use syringes, etc.
9. Artificially Inseminate
10. Register Animals and Tattoo
11. Keep Production Records
12. Castrate
13. Dehorn
14. Buy and Sell
15. Fit and Show
B. PLANT SCIENCE (Farm Crops)
16. Pollinate Plants
17. Prepare Seedbed
18. Apply Fertilizers, Lime, etc.
19. Sow or Transplant Crops
20. Cultivate Crops
21. Apply Insecticides, etc.
22. Control Weeds and Chemicals
23. Harvest Grains
24. Process Silage
25. Harvest and Cure Hay
26. Graze Pastures
27. Contour Areas
28. Test Soil
29. Identify Diseases & Insects
30. Irrigate
C. FARM BUSINESS MANAGEMENT AND MARKETING
31. Keep and Use Farm Records
32. Negotiate Loans
33. Secure Insurance
34. Make Farm Budget
35. Use Labor Effectively
36. Market Products
37. Use Farm Indexes
38. Select and Use Cooperatives
39. Comply with Federal Programs
40. File Farm Income Tax Return
D. AGRICULTURAL MECHANICS (Farming)
41. Tractor
a. Operate
b. Service
c. Adjust
d. Repair
42. Soil Preparation Tools
a. Use Properly in Field
b. Adjust
c. Repair
d. Service
43. Fertilizer Applicators
a. Use Distributors
b. Use Manure Spreaders
44. Planting, Seeding, Weed, Insect, Disease Control Equipment
a. Use Row Crop Planters
b. Use Grain Drills
c. Use Cultivators & Rotary Hoes
d. Use Sprayers and Dusters
45. Harvesting Machines
a. Use Mowers & Rakes
b. Use Balers
c. Use Harvesters
d. Use Combines
46. Electric Motors (Use, Care, etc.)
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
47. Make Plans
48. Use and Select Plans
49. Use Farm Shop Hand Tools
50. Use Farm Shop Power Tools
51. Install Water System
52. Maintain Water System
53. Construct Fences
F. SOIL AND SOIL MANAGEMENT
54. Identify Soil Characteristics
55. Take Soil Samples
56. Test Soil and Interpret Results
57. Prepare Seedbed
58. Apply Lime, Fertilizers, & Manure
59. Cultivate Effectively
60. Control Erosion
61. Provide Adequate Drainage
62. Irrigate

Fig. 17C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

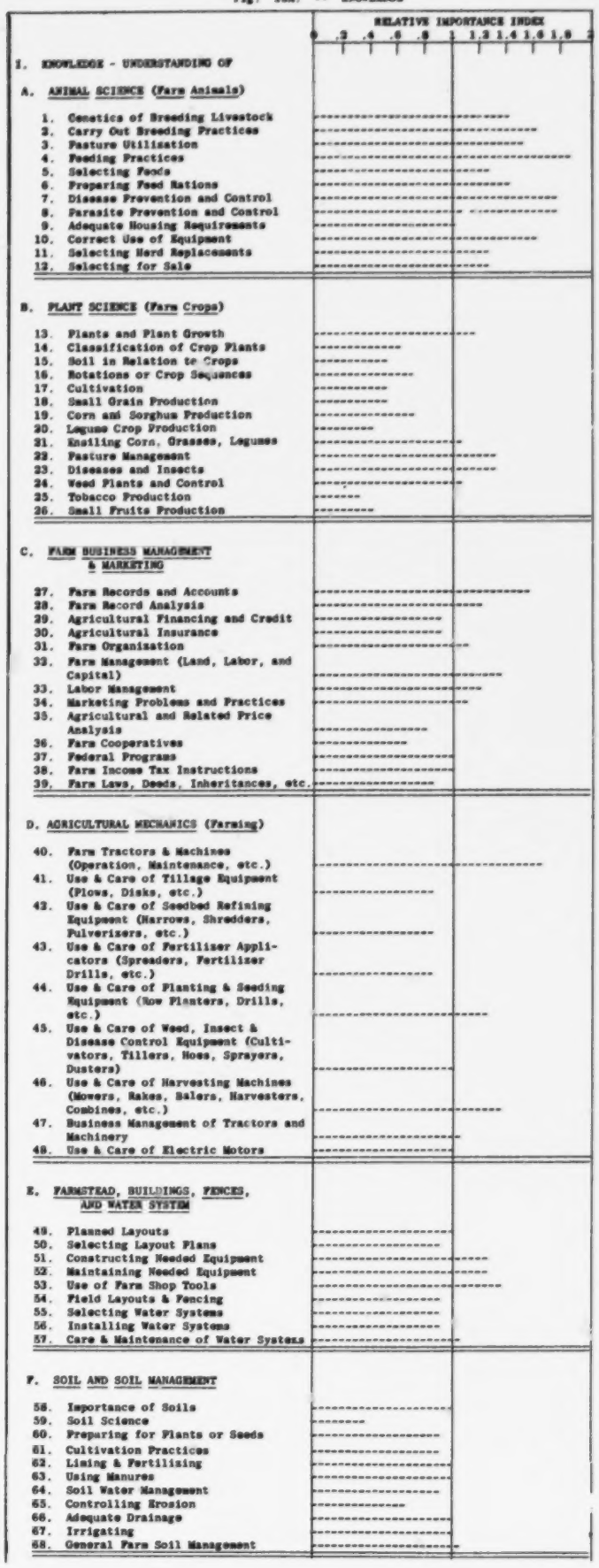
III. FOREMAN

TOOLS	RELATIVE IMPORTANCE INDEX
	0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.
Farm Shop Hand Tools	
Fencing Equipment	
Tractors (Plant Science)	
Soil Preparing and Cultivating Tools	
Seeding Equipment	
Land Preparation Tools	
Cultivators	
Farm Shop Power Tools	
Control Chute	
Fertilizer Applicators	
Sprayers and Oilers	
Production Record Book (Farm Bus. Mgmt. & Mkt.)	
Harvesters of Grain	
Tractors (Agricultural Mechanics)	
Row Planters	
Cultivators and Tillers	
Insecticide Applicators	
Farm Record Book	
Farm Account Book	
Moldboard Plows	
Mowers	
Fertilizer Distributor	
Grain Drills	
Rakes	
Balers	
Soil Sampling Tools	
Production Record Books (Animal Science)	
Transporting Equipment	
Drainage Tools	
Castrating	
Weed Control Applicators	
Barn Cleaning Equipment	
Sprayers and Dusters	
Feed Conveyor	
Forage Harvesters	
Income Tax Forms	
Disk Harrows	
Manure Spreaders	
Rotary Hoes	
Plumbing Tools	
Loaders	
Combines	
Instruments for Injections	
Dehorning	
Other Engines	
Disk Tillers	
Farm File System	
Feed Mill	
Soil Packers	
Forage Harvesters	
Blueprints	
Silage Harvesters	
Tooth Harrows	
Tattooing	
Budget Instructions	
Disk Plows	
Soil Testing Equipment	
Rotary Shredders	
Soil Mulchers	
Soil Pulverizers	
Special Crop Harvesters	
Irrigating Tools	
Subsoilers	
Office Machines	
Feet Trimming Tools	
Fitting and Showing	
Irrigation Equipment	

RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

IV. LIVESTOCK HERDSMAN

Fig. 18A. -- KNOWLEDGE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10. Correct Use of Equipment
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13. Plants and Plant Growth
14. Classification of Crop Plants
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16. Rotations or Crop Sequences
17. Cultivation
18. Small Grain Production
19. Corn and Sorghum Production
20. Legume Crop Production
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63. Using Manures
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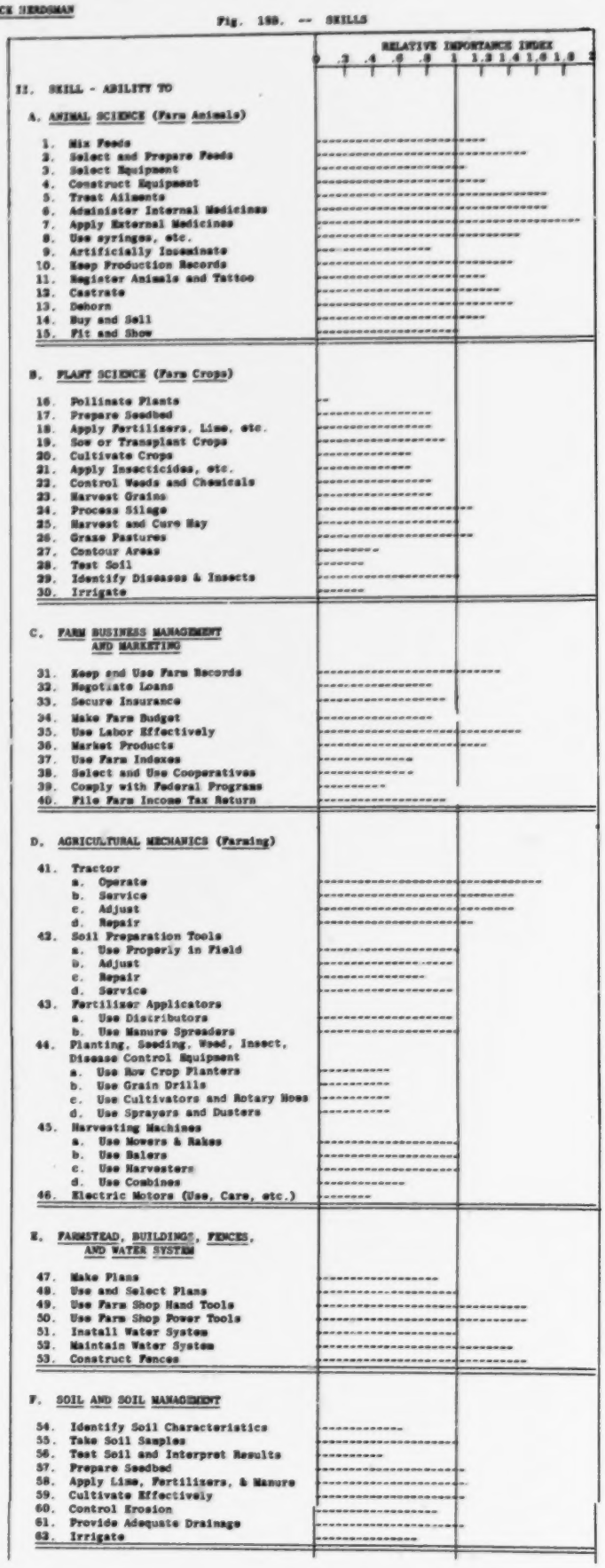
65. Controlling Erosion
66. Adequate Drainage
67. Irrigating
68. General Farm Soil Management

Fig. 18B. -- SKILLS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12. Castrate
13. Dehorn
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15. Fit and Show
B. PLANT SCIENCE (Farm Crops)
16. Pollinate Plants
17. Prepare Seedbed
18. Apply Fertilizers, Lime, etc.
19. Sow or Transplant Crops
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22. Control Weeds and Chemicals
23. Harvest Grains
24. Process Silage
25. Harvest and Cure Hay
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29. Identify Diseases & Insects
30. Irrigate
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c. Repair
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b. Use Grain Drills
c. Use Cultivators and Rotary Hoes
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56. Test Soil and Interpret Results
57. Prepare Seedbed
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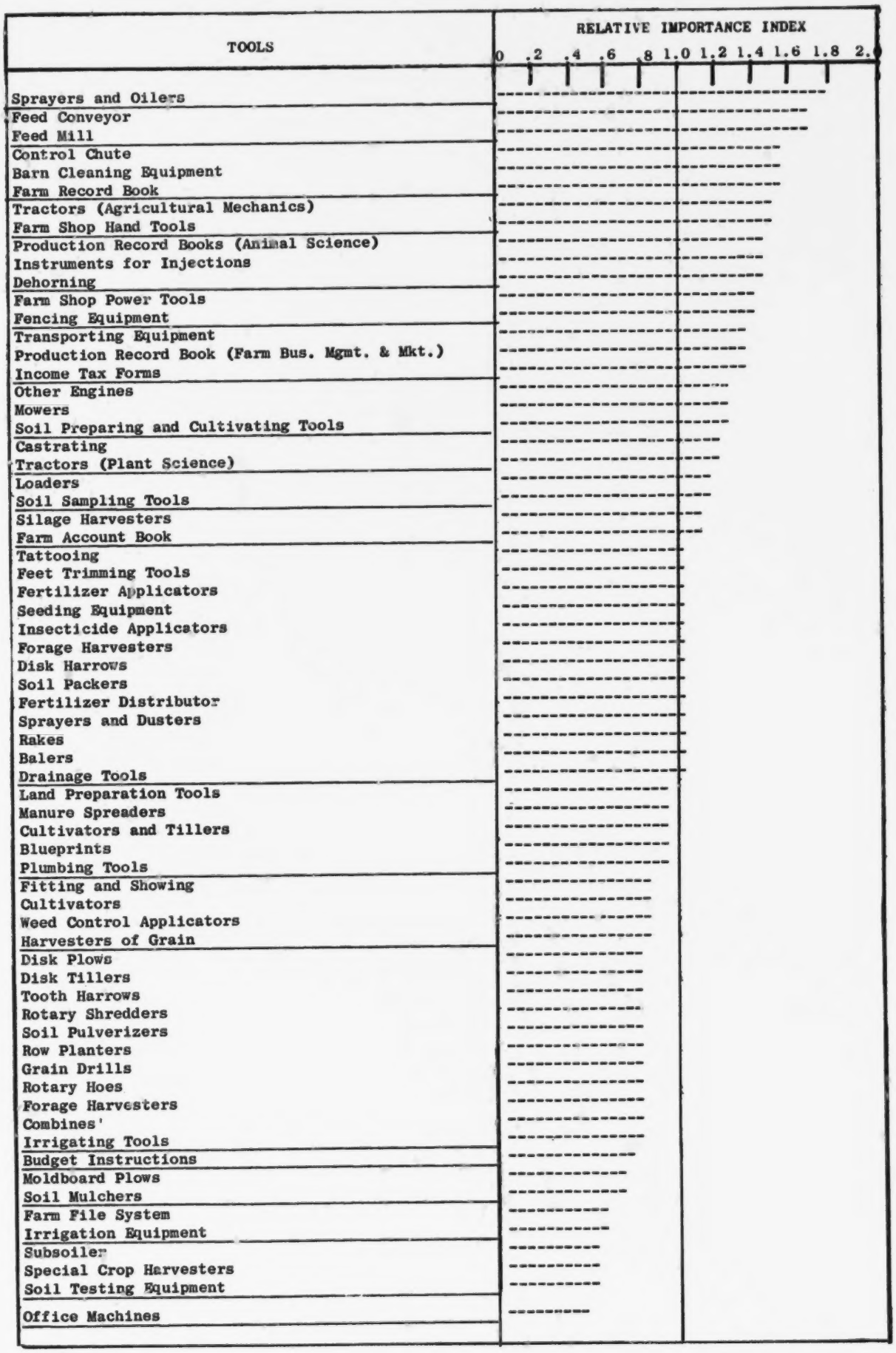
59. Cultivate Effectively
60. Control Erosion
61. Provide Adequate Drainage
62. Irrigate

Fig. 18C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

IV. LIVESTOCK HERDSMAN



RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

V. TOBACCO PRODUCER

Fig. 19A. -- KNOWLEDGE

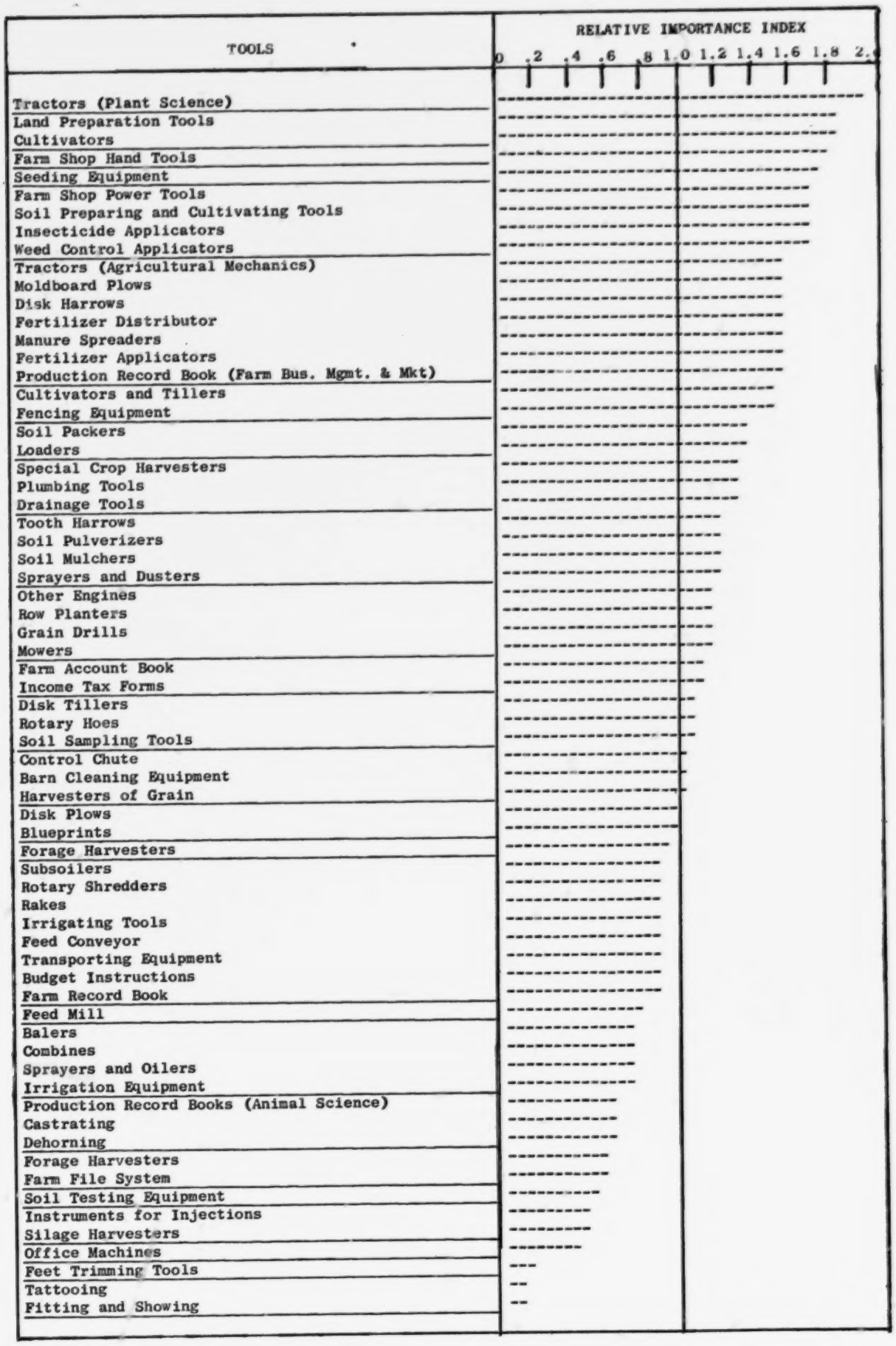
	RELATIVE IMPORTANCE INDEX 0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
I. KNOWLEDGE - UNDERSTANDING OF	
A. ANIMAL SCIENCE (Farm Animals)	
1. Genetics of Breeding Livestock	
2. Carry Out Breeding Practices	
3. Pasture Utilization	
4. Feeding Practices	
5. Selecting Feeds	
6. Preparing Feed Rations	
7. Disease Prevention and Control	
8. Parasite Prevention and Control	
9. Adequate Housing Requirements	
10. Correct Use of Equipment	
11. Selecting Herd Replacements	
12. Selecting for Sale	
B. PLANT SCIENCE (Farm Crops)	
13. Plants and Plant Growth	
14. Classification of Crop Plants	
15. Soil in Relation to Crops	
16. Rotations or Crop Sequences	
17. Cultivation	
18. Small Grain Production	
19. Corn and Sorghum Production	
20. Ensiling Corn, Grasses, Legumes	
21. Legume Crop Production	
22. Pasture Management	
23. Diseases and Insects	
24. Weed Plants and Control	
25. Tobacco Production	
26. Small Fruits Production	
C. FARM BUSINESS MANAGEMENT & MARKETING	
27. Farm Records and Accounts	
28. Farm Record Analysis	
29. Agricultural Financing and Credit	
30. Agricultural Insurance	
31. Farm Organization	
32. Farm Management (Land, Labor, and Capital)	
33. Labor Management	
34. Marketing Problems and Practices	
35. Agricultural and Related Price Analysis	
36. Farm Cooperatives	
37. Federal Programs	
38. Farm Income Tax Instructions	
39. Farm Laws, Deeds, Inheritances, etc.	
D. AGRICULTURAL MECHANICS (Farming)	
40. Farm Tractors & Machines (Operation, Maintenance, etc)	
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)	
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, etc.)	
43. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, etc.)	
44. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, etc.)	
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)	
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)	
47. Business Management of Tractors and Machinery	
48. Use & Care of Electric Motors	
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
49. Planned Layouts	
50. Selecting Layout Plans	
51. Constructing Needed Equipment	
52. Maintaining Needed Equipment	
53. Use Of Farm Shop Tools	
54. Field Layouts & Fencing	
55. Selecting Water Systems	
56. Installing Water Systems	
57. Care & Maintenance of Water Systems	
F. SOIL AND SOIL MANAGEMENT	
58. Importance of Soils	
59. Soil Science	
60. Preparing for Plants or Seeds	
61. Cultivation Practices	
62. Liming & Fertilizing	
63. Using Manures	
64. Soil Water Management	
65. Controlling Erosion	
66. Adequate Drainage	
67. Irrigating	
68. General Farm Soil Management	

Fig. 19B. -- SKILLS

	RELATIVE IMPORTANCE INDEX 0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
II. SKILL - ABILITY TO	
A. ANIMAL SCIENCE (Farm Animals)	
1. Mix Feeds	
2. Select and Prepare Feeds	
3. Select Equipment	
4. Construct Equipment	
5. Treat Ailments	
6. Administer Internal Medicines	
7. Apply External Medicines	
8. Use syringes, etc.	
9. Artificially Inseminate	
10. Keep Production Records	
11. Register Animals and Tattoo	
12. Castrate	
13. Dehorn	
14. Buy and Sell	
15. Fit and Show	
B. PLANT SCIENCE (Farm Crops)	
16. Pollinate Plants	
17. Prepare Seedbed	
18. Apply Fertilizers, Lime, etc.	
19. Sow or Transplant Crops	
20. Cultivate Crops	
21. Apply Insecticides, etc.	
22. Control Weeds and Chemicals	
23. Harvest Grains	
24. Process Silage	
25. Harvest and Cure Hay	
26. Graze Pastures	
27. Contour Areas	
28. Test Soil	
29. Identify Diseases & Insects	
30. Irrigate	
C. FARM BUSINESS MANAGEMENT AND MARKETING	
31. Keep and Use Farm Records	
32. Negotiate Loans	
33. Secure Insurance	
34. Make Farm Budget	
35. Use Labor Effectively	
36. Market Products	
37. Use Farm Indexes	
38. Select and Use Cooperatives	
39. Comply with Federal Programs	
40. File Farm Income Tax Return	
D. AGRICULTURAL MECHANICS (Farming)	
41. Tractor	
a. Operate	
b. Service	
c. Adjust	
d. Repair	
42. Soil Preparation Tools	
a. Use Properly in Field	
b. Adjust	
c. Repair	
d. Service	
43. Fertilizer Applicators	
a. Use Distributors	
b. Use Manure Spreaders	
44. Planting, Seeding, Weed, Insect, Disease Control Equipment	
a. Use Row Crop Equipment	
b. Use Grain Drills	
c. Use Cultivators & Rotary Hoes	
d. Use Sprayers and Dusters	
45. Harvesting Machines	
a. Use Mowers & Rakes	
b. Use Balers	
c. Use Harvesters	
d. Use Combines	
46. Electric Motors (Use, Care, etc.)	
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
47. Make Plans	
48. Use and Select Plans	
49. Use Farm Shop Hand Tools	
50. Use Farm Shop Power Tools	
51. Install Water System	
52. Maintain Water System	
53. Construct Fences	
F. SOIL AND SOIL MANAGEMENT	
54. Identify Soil Characteristics	
55. Take Soil Samples	
56. Test Soil and Interprat Results	
57. Prepare Seedbed	
58. Apply Lime, Fertilizers, & Manure	
59. Cultivate Effectively	
60. Control Erosion	
61. Provide Adequate Drainage	
62. Irrigate	

Fig. 19C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

V. TOBACCO PRODUCER



RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

VI. MECHANIC

Fig. 20A. -- KNOWLEDGE

I. KNOWLEDGE - UNDERSTANDING OF	RELATIVE IMPORTANCE INDEX (0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2)
A. ANIMAL SCIENCE (Farm Animals)	
1. Genetics of Breeding Livestock	0
2. Carry Out Breeding Practices	
3. Pasture Utilization	
4. Feeding Practices	
5. Selecting Feeds	
6. Preparing Feed Rations	
7. Disease Prevention and Control	
8. Parasite Prevention and Control	
9. Correct Use of Equipment	
10. Adequate Housing Requirements	
11. Selecting Herd Replacements	
12. Selecting for Sale	
B. PLANT SCIENCE (Farm Crops)	
13. Plants and Plant Growth	0
14. Classification of Crop Plants	0
15. Soil in Relation to Crops	0
16. Rotations or Crop Sequences	0
17. Cultivation	
18. Small Grain Production	0
19. Corn and Sorghum Production	0
20. Ensiling Corn, Grasses, Legumes	0
21. Legume Crop Production	0
22. Pasture Management	0
23. Diseases and Insects	0
24. Weed Plants and Control	0
25. Tobacco Production	0
26. Small Fruits Production	0
C. FARM BUSINESS MANAGEMENT & MARKETING	
27. Farm Records and Accounts	
28. Farm Record Analysis	
29. Agricultural Financing and Credit	
30. Agricultural Insurance	
31. Farm Organization	
32. Farm Management (Land, Labor, and Capital)	
33. Labor Management	0
34. Marketing Problems and Practices	0
35. Agricultural and Related Price Analysis	0
36. Farm Cooperatives	0
37. Federal Programs	0
38. Farm Income Tax Instructions	0
39. Farm Laws, Deeds, Inheritances, etc.	0
D. AGRICULTURAL MECHANICS (Farming)	
40. Farm Tractors & Machines (Operation, Maintenance, etc.)	
41. Use & Care of Tillage Equipment (Plows, Disked, etc.)	
42. Use & Care of Seedbed Refining Equipment, (Harrows, Shredders, Pulverizers, etc.)	
43. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, etc.)	
44. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, etc.)	
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)	
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)	
47. Business Management of Tractors and Machinery	
48. Use & Care of Electric Motors	
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
49. Planned Layouts	
50. Selecting Layout Plans	
51. Constructing Needed Equipment	
52. Maintaining Needed Equipment	
53. Use of Farm Shop Tools	
54. Field Layouts & Fencing	
55. Selecting Water Systems	
56. Installing Water Systems	
57. Care & Maintenance of Water Systems	
F. SOIL AND SOIL MANAGEMENT	
58. Importance of Soils	
59. Soil Science	
60. Preparing for Plants or Seeds	
61. Cultivation Practices	
62. Liming & Fertilizing	
63. Using Manures	
64. Soil Water Management	
65. Controlling Erosion	
66. Adequate Drainage	
67. Irrigating	
68. General Farm Soil Management	

Fig. 20B. -- SKILLS

II. SKILL - ABILITY TO	RELATIVE IMPORTANCE INDEX (0 .3 .4 .6 .8 1 1.2 1.4 1.6 1.8 2)
A. ANIMAL SCIENCE (Farm Animals)	
1. Mix Feeds	
2. Select and Prepare Feeds	
3. Select Equipment	
4. Construct Equipment	
5. Treat Ailments	
6. Administer Internal Medicines	
7. Apply External Medicines	
8. Use syringes, etc.	
9. Artificially Inseminate	
10. Keep Production Records	
11. Register Animals and Tattoo	
12. Castrate	
13. Dehorn	
14. Buy and Sell	
15. Fit and Show	
B. PLANT SCIENCE (Farm Crops)	
16. Pollinate Plants	0
17. Prepare Seedbed	0
18. Apply Fertilizers, Lime, etc.	
19. Sow or Transplant Crops	
20. Cultivate Crops	
21. Apply Insecticides, etc.	
22. Control Weeds and Chemicals	
23. Harvest Grains	
24. Process Silage	
25. Harvest and Cure Hay	
26. Graze Pastures	
27. Contour Areas	
28. Test Soil	
29. Identify Diseases & Insects	
30. Irrigate	
C. FARM BUSINESS MANAGEMENT & MARKETING	
31. Keep and Use Farm Records	0
32. Negotiate Loans	0
33. Secure Insurance	0
34. Make Farm Budget	0
35. Use Labor Effectively	0
36. Market Products	0
37. Use Farm Indexes	0
38. Select and Use Cooperatives	0
39. Comply with Federal Programs	0
40. File Farm Income Tax Return	0
D. AGRICULTURAL MECHANICS (Farming)	
41. Tractor	
a. Operate	
b. Service	
c. Adjust	
d. Repair	
42. Soil Preparation Tools	
a. Use Properly in Field	
b. Adjust	
c. Repair	
d. Service	
43. Fertilizer Applicators	
a. Use Distributors	
b. Use Manure Spreaders	
44. Planting, Seeding, Weed, Insect, Disease Control Equipment	
a. Use Row Crop Planters	
b. Use Grain Drills	
c. Use Cultivators & Rotary Hoes	
d. Use Sprayers and Dusters	
45. Harvesting Machines	
a. Use Mowers & Rakes	
b. Use Balers	
c. Use Harvestors	
d. Use Combines	
46. Electric Motors (Use, Care, etc.)	0
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
47. Make Plans	
48. Use and Select Plans	
49. Use Farm Shop Hand Tools	
50. Use Farm Shop Power Tools	
51. Install Water System	
52. Maintain Water System	
53. Construct Fences	
F. SOIL AND SOIL MANAGEMENT	
54. Identify Soil Characteristics	0
55. Take Soil Samples	0
56. Test Soil and Interpret Results	0
57. Prepare Seedbed	0
58. Apply Lime, Fertilizers, & Manure	
59. Cultivate Effectively	
60. Control Erosion	0
61. Provide Adequate Drainage	0
62. Irrigate	0

Fig. 20C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

VI. MECHANIC

TOOLS	RELATIVE IMPORTANCE INDEX 0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.
Feed Conveyor	
Feed Mill	
Barn Cleaning Equipment	
Transporting Equipment	
Sprayers and Oilers	
Tractors (Plant Science)	
Land Preparation Tools	
Fertilizer Applicators	
Seeding Equipment	
Cultivators	
Insecticide Applicators	
Harvesters of Grain	
Weed Control Applicators	
Silage Harvesters	
Forage Harvesters	
Irrigation Equipment	
Tractors (Agricultural Mechanics)	
Other Engines	
Moldboard Plows	
Disk Plows	
Disk Tillers	
Subsoilers	
Disk Harrows	
Tooth Harrows	
Rotary Shredders	
Soil Pulverizers	
Soil Packers	
Soil Mulchers	
Fertilizer Distributor	
Manure Spreaders	
Loaders	
Row Planters	
Grain Drills	
Cultivators and Tillers	
Rotary Hoes	
Sprayers and Dusters	
Mowers	
Rakes	
Balers	
Forage Harvesters	
Combines	
Special Crop Harvesters	
Farm Shop Hand Tools	
Farm Shop Power Tools	
Fencing Equipment	
Plumbing Tools	
Control Chute	
Production Record Books (Animal Science)	
Blueprints	

RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

VII. OTHER CROP PRODUCER

Fig. 21A. -- KNOWLEDGE

I. KNOWLEDGE - UNDERSTANDING OF	0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
A. ANIMAL SCIENCE (Farm Animals)	
1. Genetics of Breeding Livestock	-----
2. Carry Out Breeding Practices	----------
3. Pasture Utilization	----------
4. Feeding Practices	----------
5. Selecting Feeds	----------
6. Preparing Feed Rations	----------
7. Disease Prevention and Control	----------
8. Parasite Prevention and Control	----------
9. Adequate Housing Requirements	-----
10. Correct Use of Equipment	----------
11. Selecting Herd Replacements	-----
12. Selecting for Sale	0
B. PLANT SCIENCE (Farm Crops)	
13. Plants and Plant Growth	----------
14. Classification of Crop Plants	----------
15. Soil in Relation to Crops	----------
16. Rotations or Crop Sequences	----------
17. Cultivation	----------
18. Small Grain Production	----------
19. Corn and Sorghum Production	----------
20. Ensiling Corn, Grasses, Legumes	----------
21. Legume Crop Production	----------
22. Pasture Management	----------
23. Diseases and Insects	----------
24. Weed Plants and Control	----------
25. Tobacco Production	----------
26. Small Fruit Production	----------
C. FARM BUSINESS MANAGEMENT & MARKETING	
27. Farm Records and Accounts	----------
28. Farm Record Analysis	----------
29. Agricultural Financing and Credit	----------
30. Agricultural Insurance	----------
31. Farm Organization	----------
32. Farm Management (Land, Labor, and Capital)	----------
33. Labor Management	----------
34. Marketing Problems and Practices	----------
35. Agricultural and Related Price Analysis	----------
36. Farm Cooperatives	----------
37. Federal Programs	----------
38. Farm Income Tax Instructions	----------
39. Farm Laws, Deeds, Inheritances, etc.	-----
D. AGRICULTURAL MECHANICS (Farming)	
40. Farm Tractors & Machines (Operation, Maintenance, etc.)	----------
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)	----------
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, etc.)	----------
43. Use & Care of Fertilizer Applicators (Spreaders Fertilizer Drills, etc.)	----------
44. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, etc.)	----------
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)	----------
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)	----------
47. Business Management of Tractors and Machinery	----------
48. Use & Care of Electric Motors	----------
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
49. Planned Layouts	-----
50. Selecting Layout Plans	-----
51. Constructing Needed Equipment	----------
52. Maintaining Needed Equipment	----------
53. Use of Farm Shop Tools	----------
54. Field Layouts & Fencing	----------
55. Selecting Water Systems	----------
56. Installing Water Systems	----------
57. Care & Maintenance of Water System	----------
F. SOIL AND SOIL MANAGEMENT	
58. Importance of Soils	----------
59. Soil Science	----------
60. Preparing for Plants or Seeds	----------
61. Cultivation Practices	----------
62. Liming & Fertilizing	----------
63. Using Manures	----------
64. Soil Water Management	----------
65. Controlling Erosion	----------
66. Adequate Drainage	----------
67. Irrigating	----------
68. General Farm Soil Management	----------

Fig. 21B. -- SKILLS

II. SKILL - ABILITY TO	0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
A. ANIMAL SCIENCE (Farm Animals)	
1. Mix Feeds	----------
2. Select and Prepare Feeds	----------
3. Select Equipment	----------
4. Construct Equipment	----------
5. Treat Ailments	----------
6. Administer Internal Medicines	----------
7. Apply External Medicines	----------
8. Use syringes, etc.	-----
9. Artificially Inseminate	0
10. Keep Production Records	-----
11. Register Animals and Tattoo	-----
12. Castrate	----------
13. Dehorn	----------
14. Buy and Sell	-----
15. Fit and Show	-----
B. PLANT SCIENCE (Farm Crops)	
16. Pollinate Plants	0
17. Prepare Seedbed	----------
18. Apply Fertilizers, Lime, etc.	----------
19. Sow or Transplant Crops	----------
20. Cultivate Crops	----------
21. Apply Insecticides, etc.	----------
22. Control Weeds and Chemicals	----------
23. Harvest Grains	----------
24. Process Silage	----------
25. Harvest and Cure Hay	----------
26. Graze Pastures	----------
27. Contour Areas	----------
28. Test Soil	----------
29. Identify Diseases & Insects	----------
30. Irrigate	----------
C. FARM BUSINESS MANAGEMENT & MARKETING	
31. Keep and Use Farm Records	----------
32. Negotiate Loans	----------
33. Secure Insurance	----------
34. Make Farm Budget	----------
35. Use Labor Effectively	----------
36. Market Products	----------
37. Use Farm Indexes	----------
38. Select and Use Cooperatives	----------
39. Comply with Federal Programs	----------
40. File Farm Income Tax Return	----------
D. AGRICULTURAL MECHANICS (Farming)	
41. Tractor	
a. Operate	----------
b. Service	----------
c. Adjust	----------
d. Repair	----------
42. Soil Preparation Tools	
a. Use Properly in Field	----------
b. Adjust	----------
c. Repair	----------
43. Fertilizer Applicators	
a. Use Distributors	----------
b. Use Manure Spreaders	----------
44. Planting, Seeding, Weed, Insect, Disease Control Equipment	
a. Use Row Crop Planters	----------
b. Use Grain Drills	----------
c. Use Cultivators & Rotary Hoes	----------
d. Use Sprayers and Dusters	----------
45. Harvesting Machines	
a. Use Mowers & Rakes	----------
b. Use Balers	----------
c. Use Harvesters	----------
d. Use Combines	----------
46. Electric Motors (Use, Care, etc.)	----------
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	
47. Make Plans	----------
48. Use and Select Plans	----------
49. Use Farm Shop Hand Tools	----------
50. Use Farm Shop Power Tools	----------
51. Install Water System	----------
52. Maintain Water System	----------
53. Construct Fences	----------
F. SOIL AND SOIL MANAGEMENT	
54. Identify Soil Characteristics	----------
55. Take Soil Samples	----------
56. Test Soil and Interpret Results	----------
57. Prepare Seedbed	----------
58. Apply Lime, Fertilizers, & Manure	----------
59. Cultivate Effectively	----------
60. Control Erosion	----------
61. Provide Adequate Drainage	----------
62. Irrigate	----------

Fig. 21C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

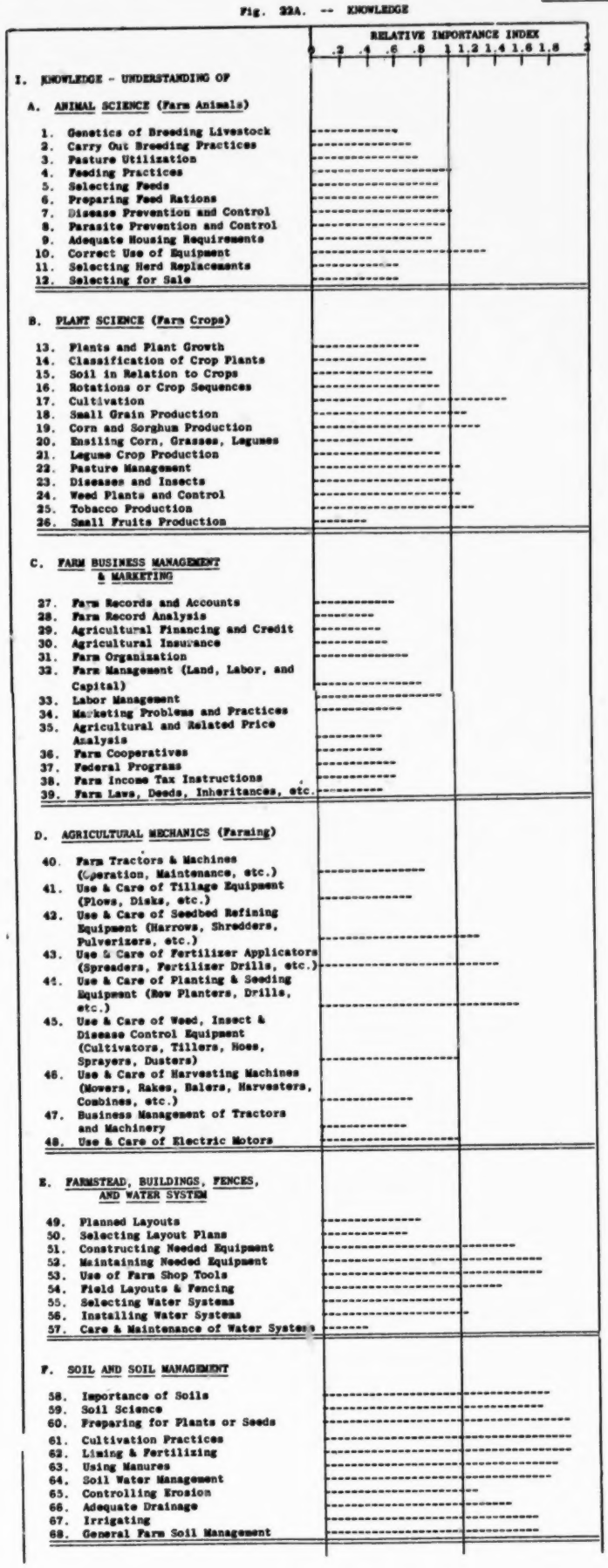
VII. OTHER CROP PRODUCER

TOOLS	RELATIVE IMPORTANCE INDEX 0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.0
Tractors (Plant Science)	
Land Preparation Tools	
Fertilizer Applicators	
Seeding Equipment	
Cultivators	
Insecticide Applicators	
Harvesters of Grain	
Tractors (Agricultural Mechanics)	
Other Engines	
Moldboard Plows	
Disk Plows	
Disk Tillers	
Subsoilers	
Disk Harrows	
Tooth Harrows	
Soil Packers	
Soil Mulchers	
Fertilizer Distributor	
Manure Spreaders	
Loaders	
Row Planters	
Grain Drills	
Cultivators and Tillers	
Rotary Hoes	
Sprayers and Dusters	
Mowers	
Rakes	
Balers	
Forage Harvesters	
Combines	
Special Crop Harvesters	
Soil Preparing and Cultivating Tools	
Weed Control Applicators	
Forage Harvesters	
Farm Shop Hand Tools	
Farm Shop Power Tools	
Fencing Equipment	
Soil Sampling Tools	
Farm Record Book	
Income Tax Forms	
Rotary Shredders	
Soil Pulverizers	
Silage Harvesters	
Irrigation Equipment	
Production Record Book (Farm Bus. Mgmt. & Mkt.)	
Farm Account Book	
Plumbing Tools	
Drainage Tools	
Irrigating Tools	
Budget Instructions	
Farm File System	
Soil Testing Equipment	
Feed Conveyor	
Feed Mill	
Control Chute	
Barn Cleaning Equipment	
Transporting Equipment	
Instruments for Injections	
Castrating	
Dehorning	
Tattooing	
Sprayers and Oilers	
Blueprints	
Production Record Books (Animal Science)	
Fitting and Showing	
Feet Trimming Tools	

RELATIVE IMPORTANCE OF COMPETENCIES FOR JOB TITLE

VIII. GENERAL FARM WORK ONLY

Fig. 22A. -- KNOWLEDGE


RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
I. KNOWLEDGE - UNDERSTANDING OF
A. ANIMAL SCIENCE (Farm Animals)
1. Genetics of Breeding Livestock
2. Carry Out Breeding Practices
3. Pasture Utilization
4. Feeding Practices
5. Selecting Feeds
6. Preparing Feed Rations
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8. Parasite Prevention and Control
9. Adequate Housing Requirements
10. Correct Use of Equipment
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12. Selecting for Sale
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13. Plants and Plant Growth
14. Classification of Crop Plants
15. Soil in Relation to Crops
16. Rotations or Crop Sequences
17. Cultivation
18. Small Grain Production
19. Corn and Sorghum Production
20. Ensiling Corn, Grasses, Legumes
21. Legume Crop Production
22. Pasture Management
23. Diseases and Insects
24. Weed Plants and Control
25. Tobacco Production
26. Small Fruits Production
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28. Farm Record Analysis
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30. Agricultural Insurance
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33. Labor Management
34. Marketing Problems and Practices
35. Agricultural and Related Price Analysis
36. Farm Cooperatives
37. Federal Programs
38. Farm Income Tax Instructions
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40. Farm Tractors & Machines (Operation, Maintenance, etc.)
41. Use & Care of Tillage Equipment (Plows, Disks, etc.)
42. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, etc.)
43. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, etc.)
44. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, etc.)
45. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)
46. Use & Care of Harvesting Machines (Mowers, Rakes, Balers, Harvesters, Combines, etc.)
47. Business Management of Tractors and Machinery
48. Use & Care of Electric Motors
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
49. Planned Layouts
50. Selecting Layout Plans
51. Constructing Needed Equipment
52. Maintaining Needed Equipment
53. Use of Farm Shop Tools
54. Field Layouts & Fencing
55. Selecting Water Systems
56. Installing Water Systems
57. Care & Maintenance of Water Systems
F. SOIL AND SOIL MANAGEMENT
58. Importance of Soils
59. Soil Science
60. Preparing for Plants or Seeds
61. Cultivation Practices
62. Liming & Fertilizing
63. Using Manures
64. Soil Water Management
65. Controlling Erosion
66. Adequate Drainage
67. Irrigating
68. General Farm Soil Management

Fig. 22B. -- SKILLS

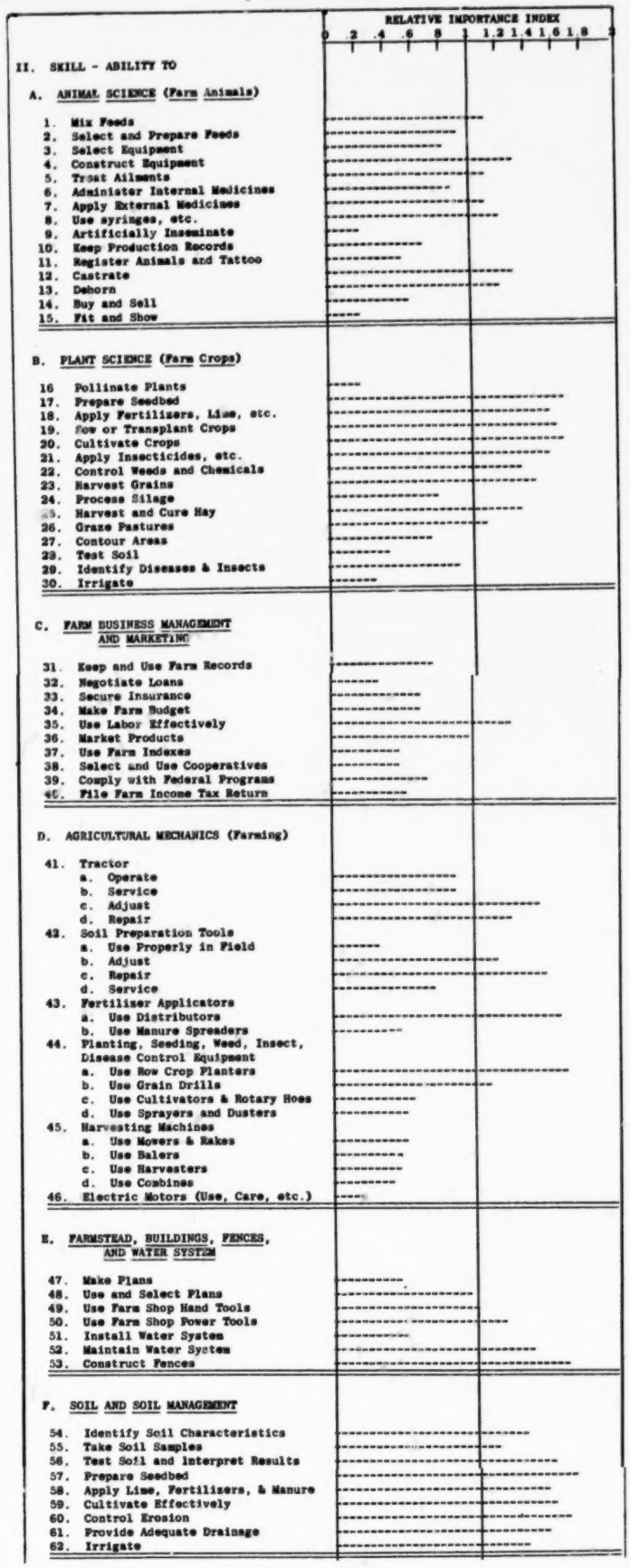
RELATIVE IMPORTANCE INDEX
0 .2 .4 .6 .8 1 1.2 1.4 1.6 1.8 2
II. SKILL - ABILITY TO
A. ANIMAL SCIENCE (Farm Animals)
1. Mix Feeds
2. Select and Prepare Feeds
3. Select Equipment
4. Construct Equipment
5. Treat Ailments
6. Administer Internal Medicines
7. Apply External Medicines
8. Use syringes, etc.
9. Artificially Inseminate
10. Keep Production Records
11. Register Animals and Tattoo
12. Castrate
13. Dehorn
14. Buy and Sell
15. Fit and Show
B. PLANT SCIENCE (Farm Crops)
16 Pollinate Plants
17. Prepare Seedbed
18. Apply Fertilizers, Lime, etc.
19. Sow or Transplant Crops
20. Cultivate Crops
21. Apply Insecticides, etc.
22. Control Weeds and Chemicals
23. Harvest Grains
24. Process Silage
25. Harvest and Cure Hay
26. Graze Pastures
27. Contour Areas
28. Test Soil
29. Identify Diseases & Insects
30. Irrigate
C. FARM BUSINESS MANAGEMENT AND MARKETING
31. Keep and Use Farm Records
32. Negotiate Loans
33. Secure Insurance
34. Make Farm Budget
35. Use Labor Effectively
36. Market Products
37. Use Farm Indexes
38. Select and Use Cooperatives
39. Comply with Federal Programs
40. File Farm Income Tax Return
D. AGRICULTURAL MECHANICS (Farming)
41. Tractor
a. Operate
b. Service
c. Adjust
d. Repair
42. Soil Preparation Tools
a. Use Properly in Field
b. Adjust
c. Repair
d. Service
43. Fertilizer Applicators
a. Use Distributors
b. Use Manure Spreaders
44. Planting, Seeding, Weed, Insect, Disease Control Equipment
a. Use Row Crop Planters
b. Use Grain Drills
c. Use Cultivators & Rotary Hoes
d. Use Sprayers and Dusters
45. Harvesting Machines
a. Use Mowers & Rakes
b. Use Balers
c. Use Harvesters
d. Use Combines
46. Electric Motors (Use, Care, etc.)
E. FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM
47. Make Plans
48. Use and Select Plans
49. Use Farm Shop Hand Tools
50. Use Farm Shop Power Tools
51. Install Water System
52. Maintain Water System
53. Construct Fences
F. SOIL AND SOIL MANAGEMENT
54. Identify Soil Characteristics
55. Take Soil Samples
56. Test Soil and Interpret Results
57. Prepare Seedbed
58. Apply Lime, Fertilizers, & Manure
59. Cultivate Effectively
60. Control Erosion
61. Provide Adequate Drainage
62. Irrigate

Fig. 22C -- RELATIVE IMPORTANCE INDEX OF TOOL USE FOR JOB TITLE

VIII. GENERAL FARM WORK ONLY

TOOLS	RELATIVE IMPORTANCE INDEX
	0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.
Tractors (Plant Science)	
Soil Preparing and Cultivating Tools	
Cultivators	
Seeding Equipment	
Fertilizer Applicators	
Land Preparation Tools	
Weed Control Applicators	
Insecticide Applicators	
Soil Testing Equipment	
Drainage Tools	
Soil Sampling Tools	
Farm Shop Hand Tools	
Blueprints	
Irrigating Tools	
Harvesters of Grain	
Control Chute	
Transporting Equipment	
Barn Cleaning Equipment	
Dehorning	
Castrating	
Farm Shop Power Tools	
Sprayers and Oilers	
Forage Harvesters	
Feed Conveyor	
Instruments for Injections	
Feed Mill	
Production Record Books (Animal Science)	
Production Record Book (Farm Bus. Mgmt. & Mkt.)	
Silage Harvesters	
Fencing Equipment	
Income Tax Forms	
Tattooing	
Farm Account Book	
Farm Record Book	
Feet Trimming Tools	
Tractors (Agricultural Mechanics	
Moldboard Plows	
Manure Spreaders	
Row Planters	
Cultivators and Tillers	
Plumbing Tools	
Office Machines	
Other Engines	
Disk Plows	
Disk Harrows	
Tooth Harrows	
Fertilizer Distributor	
Loaders	
Grain Drills	
Sprayers and Dusters	
Mowers	
Combines	
Special Crop Harvesters	
Irrigation Equipment	
Disk Tillers	
Rakes	
Balers	
Fitting and Showing	
Farm File System	
Rotary Hoes	
Budget Instructions	
Soil Packers	
Forage Harvesters	
Subsoilers	
Rotary Shredders	
Soil Pulverizers	
Soil Mulchers	

CHAPTER IV

SUMMARY

EMPLOYMENT OPPORTUNITIES AND COMPETENCIES NEEDED IN FARM OCCUPATIONS IN SELECTED COUNTIES IN KENTUCKY

The objective of this study was to secure, by personal interview with the farm operators in 11-selected counties in Kentucky, information that will identify the present and emerging farm occupations and competencies for each occupation.

The assumptions were: (1) that the farm operators of the farm businesses that are above the 1964 mean farm acreage size could give an adequate description of competencies needed by the farm employees under their supervision, (2) farm operator would indicate the relative importance of each competency to the identified on-farm occupations, and (3) that the farm operators would give adequate information of present number of employees and projected number needed by 1972.

The data for the study was secured by teachers of agriculture using a personal field survey interview. Thirteen per cent of farms in the study were included in the sample. There are 3,810 farms in the survey population. The number of farms identified by the random sampling procedure and, therefore, included in the survey is 517.

Farms and Farm Operators

The e,810 farms in the study are managed by 2,402 farm operators. Fifty-six per cent of the farm operators operate more than one farm. Slightly more than 75 per cent of operators interviewed are operator-owner living on a farm. The operators' ages range from 20 to 88. Thirty-four per cent have completed high school, 18 per cent of the operators responding completed some education beyond high school and 8 per cent completed four years of college. The summarization indicates that 49.2 per cent of the operators manage 151 to 300 acres, 0.6 per cent manage units less than 100 acres, and 4 per cent of the operators manage units over 1,000 acres. The on-farm position of operators in the 11-county area study is:

Position	Number in the Position
Owner living on farm	1511
Not owner living on farm	343
Owner living off farm	307
Not owner living off farm	204
No Responses	37
Total	2402

The ages of farm operators in the area included in this report are:

Range of Ages	Number in the Range
20 - 30	190
31 - 40	365
41 - 50	628
51 - 60	679
61 - 70	336
71 - 80	124
81 - up	22
No Responses	58
Total	2402

The number of years the operators in this study has been a farm operator is:

Number of Years as a Farm Operator	Number of Operators
1 - 10	562
11 - 20	555
21 - 30	555
31 - 40	307
41 - 50	168
51 - 60	15
61 - 70	7
71 - 80	7
No Responses	226
Total	2402

The farm operators were asked by interviewers to indicate their outlook for the future of farming. The summation is:

Outlook for the Future of Farming	Number of Operators
Excellent	606
Good	1307
Poor	263
No Responses	226
Total	2402

Farm Employees

When returns from the sampled farms are projected in the 3,810 farms of above-median size included in the 11-county area the number of employees that are identified by the following divisions are:

Division	Number in Population
Number employed full time	3351
Number employed more than one-half time	248
Number employed less than one-half time	832
Number family workers not included above	628
Total	5059

The farm employees were classified by the respondent during the interview and the summarization revealed this information:

Job Title	Number in the Population of Full-Time Employees by Job Titles	
	1967	1972 (Projected)
Operator-not owner	577	533
Operator-owner	1424	1606
Foreman	161	146
Livestock herdsman	37	29
Tobacco producer	88	138
Agricultural mechanic	22	22
Other crop producer	110	29
General farm worker	701	985

The estimated job title median turnover by occupation is:

Job Title	Number of Years
Operator-owner	20
Operator-not owner	20
Livestock herdsman	20
Foreman	16
Other crop producer	6-7
General farm worker	6-7
Tobacco producer	4

A summary of indications for formal education needed by job titles indicates the median for each to be 12 years.

Relative Importance of Competencies

The relative importance of competencies was determined from the information that the 329 farm operators provided. The operators rated each competency either necessary, desirable or not necessary. The factors for rating are 2.0 for necessary, 1.0 for desirable, and 0.0 for not necessary.

An index, for the purpose of this study, was calculated. The method for calculating the relative importance index consisted of counting the number of respondents who indicated that they considered the competency to be either necessary, desirable or not necessary. The number of responses was multiplied by a factor of two, the number of desirable responses was multiplied by a factor of one, and the number of not necessary responses was multiplied by a factor of zero. The three products thus obtained were summed and divided by the number of respondents. This yielded an index of importance for a single competency.

The relative importance index for the competencies are presented in the following summaries for each subject matter area. The first summary indicates the relative importance index for the competencies in the six subject matter areas. The summary has grouped the competencies in knowledges, skills, and tools used. The value of each learning to the designated farm occupation is indicated with the relative importance index. The summary provides the mean for each competency to the farm occupations.

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN
A N I M A L S C I E N C E
FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills, and Tools Used	RELATIVE IMPORTANCE INDEX								
	Occupations-See Footnotes								
KNOWLEDGE ANIMAL SCIENCE	1	2	3	4	5	6	7	8	M
1. Genetics of Breeding Livestock	1.4	1.4	1.0	1.3	.8	.0	.3	.7	.9
2. Carry Out Breeding Practices	1.5	1.6	1.3	1.6	.6	2.0	.5	.8	1.2
3. Pasture Utilization	1.6	1.8	1.9	1.4	.8	2.0	.5	.8	1.4
4. Feeding Practices	1.6	1.8	1.4	1.8	.8	2.0	.5	.8	1.4
5. Selecting Feeds	1.7	1.7	1.4	1.2	.8	1.0	.5	.9	1.1
6. Preparing Feed Rations	1.4	1.5	1.1	1.3	.9	1.0	.5	.9	1.0
7. Disease Prevention and Control	1.5	1.8	1.3	1.9	.9	1.0	.5	1.0	1.2
8. Parasite Prevention and Control	1.5	1.7	1.3	1.9	.8	1.0	.5	.9	1.2
9. Adequate Housing Requirements	1.3	1.6	1.3	1.0	.5	1.0	.3	.8	1.0
10. Correct Use of Equipment	.5	1.7	1.4	1.6	.9	1.0	.8	1.3	1.1
11. Selecting Herd Replacements	.3	1.8	1.0	1.2	.7	1.0	.3	.7	.9
12. Selecting For Sale	.6	1.7	1.0	1.2	.7	1.0	.0	.7	.9
SKILL ANIMAL SCIENCE									
13. Mix Feeds	1.1	1.3	1.3	1.2	.9	1.0	.5	1.0	1.0
14. Select and Prepare Feeds	1.3	1.4	1.3	1.6	.6	1.0	.5	.8	1.0
15. Select Equipment	1.5	1.6	.9	1.1	.8	1.0	.5	.7	1.0
16. Construct Equipment	1.3	1.5	1.0	1.2	1.2	2.0	.5	1.2	1.2
17. Treat Ailments	1.3	1.5	1.2	1.7	.8	1.0	.5	1.0	1.1
18. Administer Internal Medicines	1.1	1.3	1.1	1.7	.7	1.0	.5	.9	1.0
19. Apply External Medicines	1.3	1.5	1.3	1.9	.8	1.0	.5	1.0	1.1
20. Use Syringes, Etc.	1.2	1.5	1.1	1.4	.4	1.0	.3	1.1	1.0
21. Artificially Inseminate	.2	.5	.3	.8	.2	1.0	.0	.3	.4
22. Keep Production Records	1.4	1.7	1.2	1.4	.8	1.0	.3	.7	1.0
23. Register Animals and Tattoo	.6	1.0	.9	1.2	.2	1.0	.3	.6	.7
24. Castrate	1.5	1.6	1.3	1.3	.9	1.0	.5	1.3	1.1
25. Dehorn	1.3	1.4	1.2	1.4	.8	1.0	.5	1.2	1.1
26. Buy and Sell	1.5	1.7	1.0	1.2	.7	1.0	.3	.6	1.0
27. Fit and Show	.4	.6	.6	1.0	.2	1.0	.3	.3	.5
TOOLS USED ANIMAL SCIENCE									
28. Feed Conveyor	1.0	1.3	1.2	1.7	.9	2.0	.5	1.1	1.2
29. Feed Mill	.9	.9	1.0	1.7	.8	2.0	.5	.9	1.0
30. Control Chute	1.3	1.5	1.5	1.6	1.0	1.0	.5	1.4	1.2
31. Production Record Books	1.4	1.6	1.3	1.4	.6	1.0	.3	.9	1.0
32. Barn Cleaning Equipment	1.3	1.4	1.2	1.6	1.0	2.0	.5	1.3	1.2
33. Transporting Equipment	1.4	1.5	1.3	1.3	.9	2.0	.5	1.3	1.2
34. Instruments for Injections	1.2	1.4	1.1	1.4	.5	.0	.5	1.0	.8
35. Castrating	1.4	1.6	1.2	1.2	.6	.0	.5	1.2	9
36. Dehorning	1.3	1.4	1.1	1.4	.6	.0	.5	1.2	.9
37. Tattooing	.6	.8	.9	1.0	.1	.0	.5	.6	.5
38. Fitting and Showing	.4	.4	.5	.8	.1	.0	.3	.4	.3
39. Sprayers and Oilers	1.4	1.5	1.4	1.8	.7	2.0	.5	1.8	1.3
40. Feet Trimming Tools	.7	.9	.6	1.0	.2	.0	.3	.5	.5

1. Operator-Not Owner
2. Operator and Owner
3. Foreman
4. Livestock Herdsman
5. Tobacco Producer
6. Agricultural Mechanics
7. Other Crop Producer
8. General Farm Work Only

M-Mean of the Relative Importance Indeces of the occupation in each competency

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN
PLANT SCIENCE
FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills, and Tools Used	RELATIVE IMPORTANCE INDEX								
	Occupations-See Footnotes								
KNOWLEDGE PLANT SCIENCE	1	2	3	4	5	6	7	8	M
41. Plants & Plant Growth	1.7	1.7	1.4	1.1	1.9	.0	1.5	.8	1.2
42. Classification of Crop Plants	1.7	1.5	1.3	.7	1.4	.0	1.3	.9	1.1
43. Soil in Relation to Crops	1.7	1.7	1.3	.6	1.6	.0	1.3	.9	1.1
44. Rotations or Crop Sequences	1.8	1.7	1.3	.8	1.5	.0	1.5	.9	1.1
45. Cultivation	1.9	1.8	1.6	.6	1.9	1.0	2.0	1.4	1.5
46. Small Grain Production	1.7	1.7	1.2	.6	1.5	.0	2.0	1.1	1.1
47. Corn & Sorghum Production	1.8	1.7	1.5	.8	1.3	.0	2.0	1.2	1.2
48. Ensiling Corn, Grasses, Legumes	1.0	1.2	1.0	1.0	.9	.0	1.3	.8	.9
49. Legume Crop Production	1.6	1.7	1.4	.4	1.3	.0	1.8	.9	1.1
50. Pasture Management	1.6	1.8	1.4	1.2	1.2	.0	1.0	1.0	1.1
51. Diseases & Insects	1.8	1.8	1.4	1.2	1.9	.0	1.8	1.0	1.3
52. Weed Plants & Control	1.8	1.8	1.5	1.0	1.9	.0	2.0	1.0	1.3
53. Tobacco Production	1.4	1.5	1.2	.3	1.9	.0	1.0	1.2	1.0
54. Small Fruits Production	.4	.6	.4	.4	.8	.0	.5	.4	.4
SKILL PLANT SCIENCE									
55. Pollinate Plants	.5	.6	.3	.1	.3	.0	.0	.3	2.7
56. Prepare Seedbed	1.9	.8	1.6	.8	1.9	.0	2.0	1.7	1.3
57. Apply Fertilizers, Lime, Etc.	1.9	1.8	1.6	.8	1.7	1.0	2.0	1.6	1.5
58. Sow or Transplant Crops	1.9	1.8	1.5	.9	1.9	2.0	2.0	1.6	1.7
59. Cultivate Crops	1.9	1.8	1.6	.7	1.9	2.0	2.0	1.6	1.6
60. Apply Insecticides, Etc.	1.8	1.7	1.4	.7	1.6	2.0	2.0	1.6	1.6
61. Control Weeds with Chemicals	1.7	1.7	1.3	.8	1.6	2.0	1.8	1.4	1.5
62. Harvest Grains	1.9	1.8	1.6	.8	1.3	1.0	2.0	1.5	1.4
63. Process Silage	.9	1.0	1.0	1.1	.4	1.0	1.3	.8	.9
64. Harvest and Cure Hay	1.6	1.7	1.6	1.0	1.5	1.0	1.8	1.4	1.4
65. Graze Pastures	1.6	1.7	1.4	1.1	1.0	1.0	.8	1.1	1.2
66. Contour Areas	1.2	1.4	1.0	.4	1.4	1.0	.8	.7	.9
67. Test Soil	1.0	1.0	.8	.3	.9	1.0	1.3	1.5	.8
68. Identify Diseases & Insects	1.6	1.6	1.2	1.0	1.6	1.0	1.5	.9	1.3
69. Irrigate	1.5	.8	.6	1.3	.9	1.0	1.3	.4	.9
TOOLS USED PLANT SCIENCE									
70. Tractors	1.9	1.8	1.7	1.2	2.0	2.0	2.0	1.7	1.7
71. Land Preparation Tools	1.9	1.8	1.6	.9	1.8	2.0	2.0	1.6	1.7
72. Fertilizer Applicators	1.8	1.5	1.4	1.0	1.5	2.0	2.0	1.6	1.6
73. Seeding Equipment	1.9	1.7	1.6	1.0	1.8	2.0	2.0	1.6	1.7
74. Cultivators	1.9	1.7	1.6	.8	1.9	2.0	2.0	1.7	1.6
75. Insecticide Applicators	1.7	1.5	1.3	1.0	1.7	2.0	2.0	1.5	1.5
76. Weed Control Applicators	1.7	1.5	1.2	.8	1.7	2.0	1.8	1.5	1.5
77. Harvesters of Grain	1.8	1.6	1.4	.8	1.0	2.0	2.0	1.4	1.5
78. Silage Harvesters	.9	.9	1.0	1.1	.5	2.0	1.3	.8	1.0
79. Forage Harvesters	1.3	1.3	1.1	1.0	.9	2.0	1.8	1.1	1.3
80. Irrigation Equipment	.5	.6	.4	.6	.7	2.0	1.3	.4	.8

1. Operator-Not Owner
2. Operator and Owner
3. Foreman
4. Livestock Herdsman
5. Tobacco Producer
6. Agricultural Mechanics
7. Other Crop Producer
8. General Farm Work Only

M-Mean of the Relative Importance Indeces of the occupation in each competency

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN
F A R M B U S I N E S S M A N A G E M E N T A N D M A R K E T I N G
FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills and Tools Used	RELATIVE IMPORTANCE INDEX Occupations-See Footnotes								
KNOWLEDGE FARM BUSINESS MANAGEMENT & MARKETING	1	2	3	4	5	6	7	8	M
81. Farm Records and Accounts	1.8	1.8	1.4	1.6	1.4	1.0	.8	.6	1.3
82. Farm Record Analysis	1.4	1.5	1.4	1.2	.8	1.0	.8	.5	1.07
83. Agricultural Financing and Credit	1.6	1.7	1.3	.9	1.3	1.0	.8	.5	1.13
84. Agricultural Insurance	1.5	1.6	1.0	.9	1.3	1.0	1.2	.6	1.13
85. Farm Organization	1.6	1.6	1.6	1.1	.9	1.0	.8	.7	1.16
86. Farm Management (Land, Labor, & Capital)	1.9	1.9	1.4	1.3	1.3	1.0	1.0	.8	1.32
87. Labor Management	1.7	1.8	1.6	1.2	1.5	.0	1.0	1.0	1.22
88. Marketing Problems & Practices	1.7	1.7	1.4	1.1	1.3	.0	1.3	.6	1.13
89. Agricultural & Related Price Analysis	1.3	1.3	1.2	.8	.5	.0	.8	.5	.80
90. Farm Cooperatives	1.4	1.4	1.1	.7	.9	.0	1.0	.5	.89
91. Federal Programs	1.5	1.7	1.3	1.0	1.2	.0	.8	.6	1.01
92. Farm Income Tax Instructions	1.6	1.7	1.3	1.0	1.2	.0	1.5	.6	1.11
93. Farm Law, Deeds, Inheritance, Etc.	1.4	1.5	1.0	.9	.9	.0	.3	.5	.81
SKILL FARM BUSINESS MANAGEMENT & MARKETING									
94. Keep and Use Farm Records	1.9	1.8	1.4	1.3	1.2	.0	1.5	.7	1.22
95. Negotiate Loans	1.6	1.6	1.0	.8	.9	.0	.8	.4	.88
96. Secure Insurance	1.6	1.7	1.1	.9	1.4	.0	.3	.7	.96
97. Make Farm Budget	1.6	1.6	1.1	.8	.9	.0	1.0	.7	.96
98. Use Labor Effectively	1.8	1.8	1.7	1.4	1.5	.0	1.8	1.3	1.41
99. Market Products	1.8	1.8	.7	1.2	1.5	.0	1.8	1.0	1.22
100. Use Farm Indexes	1.1	1.2	1.2	.7	.3	.0	1.0	.5	.75
101. Select and Use Cooperatives	1.3	1.3	1.0	.7	.7	.0	1.5	.5	.87
102. Comply with Federal Programs	1.4	1.6	1.4	.4	1.5	.0	1.3	.7	1.03
103. File Farm Income Tax Return	1.5	1.4	1.0	.9	.5	.0	1.5	.5	.91
TOOLS USED FARM BUSINESS MANAGEMENT & MARKETING									
104. Production Record Books	1.7	1.7	1.4	1.3	1.5	.0	1.3	.9	1.22
105. Office Machines	.8	.9	.7	.4	.4	.0	.0	.5	.46
106. Budget Instructions	1.2	1.3	.9	.7	.9	.0	1.0	.3	.78
107. Farm Record Book	1.8	1.7	1.3	1.6	.9	.0	1.5	.6	1.17
108. Farm Account Book	1.6	1.6	1.3	1.1	1.0	.0	1.3	.6	1.06
109. Farm File System	1.3	1.2	1.1	.6	.5	.0	1.0	.3	.75
110. Income Tax Forms	1.6	1.6	1.2	1.3	1.0	.0	1.5	.7	1.11

1. Operator-Not Owner
2. Operator and Owner
3. Foreman
4. Livestock Herdsman
5. Tobacco Producer
6. Agricultural Mechanics
7. Other Crop Producer
8. General Farm Work Only

M-Mean of the Relative Importance Indeces of the occupation in each competency

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN AGRICULTURAL MECHANICS FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills, and Tools Used	RELATIVE IMPORTANCE INDEX Occupations-See Footnotes								
KNOWLEDGE AGRICULTURAL MECHANICS	1	2	3	4	5	6	7	8	M
111. Farm Tractors & Machines (Operation, Maintenance, Etc.)	1.9	1.9	1.7	1.6	1.9	1.0	2.0	.8	1.60
112. Use & Care of Tillage Equipment (Plows, Disks, Etc.)	1.9	1.9	1.6	.9	1.9	2.0	2.0	.7	1.61
113. Use & Care of Seedbed Refining Equipment (Harrows, Shredders, Pulverizers, Etc.)	1.8	1.9	1.8	.9	1.9	2.0	2.0	1.2	1.69
114. Use & Care of Fertilizer Applicators (Spreaders, Fertilizer Drills, Etc.)	1.8	1.8	1.7	.9	1.9	2.0	2.0	1.3	1.67
115. Use & Care of Planting & Seeding Equipment (Row Planters, Drills, Etc.)	1.8	1.9	1.9	1.3	1.9	2.0	2.0	1.5	1.79
116. Use & Care of Weed, Insect & Disease Control Equipment (Cultivators, Tillers, Hoes, Sprayers, Dusters)	1.8	1.8	1.7	1.0	1.9	1.0	2.0	1.0	1.52
117. Use & Care of Harvesting Machines	1.8	1.8	1.7	1.4	1.4	2.0	2.0	.7	1.60
118. Business Management of Tractors and Machinery	1.8	1.7	1.4	1.1	1.4	2.0	1.3	.7	1.42
119. Use & Care of Electric Motors	1.5	1.5	1.3	1.0	1.1	1.0	1.0	.9	1.16
SKILL AGRICULTURAL MECHANICS									
120. Tractor:									
a. Operate	1.9	1.8	1.5	1.6	1.6	2.0	2.0	1.0	1.67
b. Service	1.9	1.8	1.5	1.4	1.9	2.0	2.0	1.0	1.69
c. Adjust	1.8	1.7	1.7	1.4	1.7	2.0	1.8	1.4	1.69
d. Repair	1.6	1.5	1.4	1.1	1.3	2.0	1.5	1.2	1.45
121. Soil Preparation Tools:									
a. Use Properly in Field	1.9	1.7	1.7	1.0	1.6	2.0	2.0	1.3	1.66
b. Adjust	1.9	1.8	1.7	.9	1.9	2.0	2.0	1.2	1.67
c. Repair	1.7	1.6	1.5	.8	1.4	2.0	1.5	1.5	1.50
d. Service	1.8	1.7	1.6	.9	1.6	2.0	1.8	.8	1.52
122. Fertilizer Applicators:									
a. Use Distributors	1.7	1.7	1.7	.9	1.9	2.0	2.0	.6	1.56
b. Use Manure Spreaders	1.6	1.7	1.5	1.0	1.8	2.0	1.8	.4	1.47
123. Planting, Seeding, Weed, Insect Disease Control Equip.									
a. Use Row Crop Planters	1.8	1.8	1.7	.5	1.5	2.0	2.0	1.7	1.62
b. Use Grain Drills	1.8	1.7	1.7	.5	1.1	2.0	2.0	1.1	1.49
c. Use Cultivators & Rotary Hoes	1.8	1.7	1.5	.5	1.7	2.0	2.0	.6	1.47
d. Use Sprayers and Dusters	1.8	1.6	1.3	.5	1.7	2.0	2.0	.5	1.42
124. Harvesting Machines	1.7	1.7	1.3	1.0	.9	2.0	1.8	.5	1.36
a. Use Mowers & Rakes	1.7	1.7	1.3	1.0	.9	2.0	1.8	.5	1.35
b. Use Balers	1.6	1.5	1.4	1.0	.8	2.0	1.8	.5	1.33
c. Use Harvesters	1.6	1.5	1.2	1.0	.9	2.0	2.0	.5	1.33
125. Electric Motors (Use, Care, Etc.)	1.3	1.0	.7	.4	.5	2.0	1.3	.3	.93
TOOLS USED AGRICULTURAL MECHANICS									
126. Tractors	1.9	1.7	1.4	1.5	1.6	2.0	2.0	.5	1.57
127. Other Engines	1.6	1.4	1.1	1.3	1.1	2.0	2.0	.4	1.36
128. Moldboard Plows	1.8	1.6	1.3	.6	1.6	2.0	2.0	.5	1.42
129. Disk Plows	1.5	1.2	.9	.8	.9	2.0	2.0	.5	1.22
130. Disk Tillers	1.5	1.3	1.1	.8	1.1	2.0	2.0	.4	1.27
131. Subsoilers	1.1	1.0	.7	.5	.9	2.0	2.0	.2	1.05
132. Disk Harrows	1.8	1.6	1.2	1.0	1.6	2.0	2.0	.5	1.46
133. Tooth Harrows	1.4	1.2	1.0	1.8	1.2	2.0	2.0	.5	1.39
134. Rotary Shredders	1.5	1.2	.9	.8	.9	2.0	1.5	.2	1.12
135. Soil Pulverizers	1.1	1.0	.9	.8	1.2	2.0	1.5	.2	1.09
136. Soil Packers	1.4	1.2	1.0	1.0	1.4	2.0	2.0	.3	1.29
137. Soil Mulchers	1.2	.9	.9	.6	1.2	2.0	2.0	1	1.11
138. Fertilizer Dist.	1.7	1.4	1.3	1.0	1.6	2.0	2.0	.5	1.44
139. Manure Spreaders	1.5	1.5	1.2	.9	1.6	2.0	2.0	.5	1.40
140. Loaders	1.4	1.4	1.1	1.1	1.4	2.0	2.0	.5	1.36
141. Row Planters	1.9	1.6	1.4	.8	1.1	2.0	2.0	.5	1.41
142. Grain Drills	1.8	1.6	1.3	.8	1.1	2.0	2.0	.5	1.39
143. Cultivators and Tillers	1.8	1.6	1.4	.9	1.5	2.0	2.0	.5	1.46
144. Rotary Hoes	1.6	1.3	1.2	.8	1.1	2.0	2.0	.3	1.29
145. Sprayers and Dusters	1.7	1.5	1.2	1.0	1.2	2.0	2.0	.5	1.39
146. Mowers	1.7	1.6	1.3	1.3	1.1	2.0	2.0	.5	1.44
147. Rakes	1.6	1.6	1.3	1.0	.9	2.0	2.0	.4	1.35
148. Balers	1.6	1.5	1.3	1.0	.7	2.0	2.0	.4	1.31
149. Forage Harvesters	1.2	1.1	1.0	.8	.6	2.0	2.0	.2	1.11
150.Combines	1.7	1.4	1.1	.8	.7	2.0	2.0	.4	1.26
151. Special Crop Harvesters (Tobacco, Corn, Etc.)	1.4	1.2	.9	.5	1.3	2.0	2.0	.5	1.22

1. Operator-Not Owner
2. Operator and Owner
3. Foreman
4. Livestock Herdsman
5. Tobacco Producer
6. Agricultural Mechanics
7. Other Crop Producer
8. General Farm Work Only

M-Mean of the Relative Importance Indeces of the occupation in each competency

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN
F A R M S T E A D B U I L D I N G S, F E N C E S, A N D W A T E R S Y S T E M
FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills, and Tools Used	RELATIVE IMPORTANCE INDEX								
	Occupations-See Footnotes								
KNOWLEDGE — FARMSTEAD BUILDINGS, FENCES, AND WATER SYSTEM	1	2	3	4	5	6	7	8	M
152. Planned Layouts	1.5	1.6	1.3	1.0	1.1	1.0	.3	.8	1.07
153. Selecting Layout Plans	1.5	1.5	1.2	.9	.7	1.0	.3	.7	.97
154. Constructing Needed Equipment	1.6	1.6	1.3	1.3	.5	2.0	1.5	1.4	1.40
155. Maintaining Needed Equipment	1.7	1.8	1.7	1.4	1.6	2.0	1.5	1.5	1.65
156. Use of Farm Shop Tools	1.7	1.8	1.7	1.4	1.9	2.0	1.8	1.6	1.74
157. Field Layouts & Fencing	1.7	1.8	1.5	.9	1.2	1.0	.8	1.3	1.27
158. Selecting Water Systems	1.5	1.5	1.1	.9	1.1	1.0	.8	1.0	1.11
159. Installing Water Systems	1.1	1.2	.9	.9	1.1	1.0	.8	1.0	1.00
160. Care & Maintenance of Water Systems	1.4	1.6	1.4	1.1	1.2	1.0	.8	.3	1.10
SKILL — FARMSTEAD BUILDINGS, FENCES, AND WATER SYSTEM									
161. Make Plans	1.6	1.6	1.2	.9	1.1	1.0	.8	.5	1.09
162. Use and Select Plans	1.6	1.7	1.4	1.0	1.2	1.0	.5	.9	1.16
163. Use Farm Shop Hand Tools	1.7	1.8	1.6	1.5	1.9	2.0	1.8	1.1	1.67
164. Use Farm Shop Power Tools	1.6	1.7	1.5	1.5	1.6	2.0	1.8	1.3	1.62
165. Install Water System	1.1	1.1	1.0	1.0	.9	2.0	.8	1.5	1.17
166. Maintain Water System	1.4	1.5	1.5	1.4	1.4	2.0	.8	1.4	1.42
167. Construct Fences	1.6	1.8	1.7	1.5	1.6	2.0	.5	1.7	1.56
TOOLS USED — FARMSTEAD BUILDINGS, FENCES, AND WATER SYSTEM									
168. Blueprints	.9	1.0	1.0	.9	.9	1.0	.5	1.4	.95
169. Farm Shop Hand Tools	1.7	1.8	1.7	1.5	1.8	2.0	1.8	1.4	1.71
170. Farm Shop Power Tools	1.7	1.7	1.5	1.4	1.7	2.0	1.8	1.2	1.62
171. Fencing Equipment	1.6	1.7	1.7	1.4	1.5	2.0	1.8	.8	1.56
172. Plumbing Tools	1.2	1.2	1.2	.9	1.3	2.0	1.3	.5	1.20

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M-Mean of the Relative Importance Indeces of the occupation in each competency

RELATIVE IMPORTANCE INDEX OF COMPETENCIES IN
S O I L A N D S O I L M A N A G E M E N T
FOR EACH OCCUPATION

COMPETENCIES - Knowledge, Skills, and Tools Used	RELATIVE IMPORTANCE INDEX								
	Occupations-See Footnotes								
KNOWLEDGE SOIL AND SOIL MANAGEMENT	1	2	3	4	5	6	7	8	M
173. Importance of Soils	1.8	1.8	1.6	1.0	1.7	1.0	1.3	1.6	1.47
174. Soil Science	1.3	1.5	1.2	.9	1.1	1.0	1.0	1.6	1.20
175. Preparing for Plants or Seeds	1.9	1.8	1.7	.9	2.0	1.0	1.8	1.8	1.61
176. Cultivation Practices	1.9	1.8	1.7	9	2.0	2.0	2.0	1.8	1.76
177. Liming & Fertilizing	1.9	1.9	1.8	1.0	2.0	2.0	2.0	1.8	1.80
178. Using Manures	1.6	1.7	1.6	1.0	1.9	1.0	1.8	1.6	1.52
179. Soil Water Management	1.7	1.8	1.5	.9	1.6	1.0	1.3	1.6	1.42
180. Controlling Erosion	1.8	1.8	1.5	.6	1.6	1.0	1.3	1.0	1.32
181. Adequate Drainage	1 8	1.7	1.4	1.0	1.5	1.0	1.3	1.3	1.37
182. Irrigating	.7	1.0	1.0	1.0	1.1	1.0	1.3	1.5	1.07
183. General Farm Soil Management	.7	1.8	1.6	1.1	1.3	1.0	1.3	1.5	1.29
SKILL SOIL AND SOIL MANAGEMENT									
184. Identify Soil Characteristics	1.5	1.4	1.6	.6	1.6	1.0	1.0	1.4	1.26
185. Take Soil Samples	1.7	1.7	1.5	1.0	1.6	.0	2.0	1.1	1.32
186. Test Soil and Interpret Results	.8	.9	.9	1.5	.9	.0	1.0	1.5	.94
187. Prepare Seedbed	1.9	1.8	1.8	1.1	1.9	.0	2.0	1.7	1.52
188. Apply Lime, Fertilizers, & Manure	1.9	1.8	1.6	1.1	1.7	2.0	2.0	1.6	1.71
189. Cultivate Effectively	1.9	1.8	1.6	1.1	1.7	2.0	2.0	1.6	1.71
190. Control Erosion	1.8	1.8	1.7	.9	1.7	.0	1.5	1.7	1.39
191. Provide Adequate Drainage	1.7	1.7	1.5	.1	1.4	.0	1.3	1.5	1.15
192. Irrigate	.5	.9	.9	.8	1.1	.0	1.3	1.4	.86
TOOLS USED SOIL AND SOIL MANAGEMENT									
193. Soil Testing Equipment	.6	.8	.9	.5	.5	.0	.8	1.5	.70
194. Soil Preparing and Cultivating Tools	1.8	1.7	1.6	1.3	1.7	.0	2.0	1.7	1.47
195. Drainage Tools	1.4	1.2	1.2	1.0	1.3	.0	1.3	1.5	1.11
196. Irrigating Tools	.6	.7	.9	.8	.9	.0	1.3	1.4	.82
197. Soil Sampling Tools	1.5	1.3	1.3	1.1	1.1	.0	1.8	1.4	1.19

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8. General Farm Work Only

M-Mean of the Relative Importance Indeces of the occupation in each competency

THE RANK OF SUBJECT MATTER AREAS TO JOB TITLES

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
OPERATOR AND OWNER	KNOWLEDGE	1	AGRICULTURAL MECHANICS	1.78
		2	SOIL AND SOIL MANAGEMENT	1.68
		3	ANIMAL SCIENCE	1.66
		4	FARM BUSINESS MANAGEMENT AND MARKETING	1.61
		5	FARMSTEAD BUILDINGS, FENCES, AND WATER SYSTEM	1.59
		6	PLANT SCIENCE	1.56
	SKILLS	1	AGRICULTURAL MECHANICS	1.65
		2	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.59
		3	FARM BUSINESS MANAGEMENT AND MARKETING	1.58
		4	SOIL AND SOIL MANAGEMENT	1.53
		5	PLANT SCIENCE	1.49
		6	ANIMAL SCIENCE	1.33

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
OPERATOR NOT OWNER	KNOWLEDGE	1	AGRICULTURAL MECHANICS	1.77
		2	SOIL AND SOIL MANAGEMENT	1.62
		3	FARM BUSINESS MANAGEMENT AND MARKETING	1.55
		4	PLANT SCIENCE	1.54
		5	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.50
		6	ANIMAL SCIENCE	1.23
	SKILLS	1	AGRICULTURAL MECHANICS	1.72
		2	FARM BUSINESS MANAGEMENT AND MARKETING	1.54
		3	SOIL AND SOIL MANAGEMENT	1.52
		4	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.51
		5	PLANT SCIENCE	1.44
		6	ANIMAL SCIENCE	1.13

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
FOREMAN	KNOWLEDGE	1	AGRICULTURAL MECHANICS	1.63
		2	SOIL AND SOIL MANAGEMENT	1.50
		3	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEMS	1.32
		4	FARM BUSINESS MANAGEMENT AND MARKETING	1.31
		5	PLANT SCIENCE	1.29
		6	ANIMAL SCIENCE	1.25
	SKILLS	1	AGRICULTURAL MECHANICS	1.46
		2	SOIL AND SOIL MANAGEMENT	1.45
		3	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.41
		4	FARM BUSINESS MANAGEMENT AND MARKETING	1.26
		5	PLANT SCIENCE	1.23
		6	ANIMAL SCIENCE	1.04

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
LIVESTOCK HERDSMAN	KNOWLEDGE	1	ANIMAL SCIENCE	1.43
		2	AGRICULTURAL MECHANICS	1.11
		3	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.07
		4	FARM BUSINESS MANAGEMENT AND MARKETING	1.05
		5	SOIL AND SOIL MANAGEMENT	.88
		6	PLANT SCIENCE	.78
	SKILLS	1	ANIMAL SCIENCE	1.34
		2	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.25
		3	SOIL AND SOIL MANAGEMENT	.92
		4	FARM BUSINESS MANAGEMENT AND MARKETING	.91
		5	AGRICULTURAL MECHANICS	.80
		6	PLANT SCIENCE	.73

THE RANK OF SUBJECT MATTER AREAS TO JOB TITLES--(CONTINUED)

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
TOBACCO PRODUCER	KNOWLEDGE	1	ATRICULTURAL MECHANICS	1.69
		2	SOIL AND SOIL MANAGEMENT	1.62
		3	PLANT SCIENCE	1.50
		4	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.26
		5	FARM BUSINESS MANAGEMENT AND MARKETING	1.09
		6	ANIMAL SCIENCE	.75
	SKILLS	1	SOIL AND SOIL MANAGEMENT	1.52
		2	AGRICULTURAL MECHANICS	1.39
		3	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.39
		4	PLANT SCIENCE	1.33
		5	FARM BUSINESS MANAGEMENT AND MARKETING	1.03
		6	ANIMAL SCIENCE	.65

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
AGRICULTURAL MECHANICS	KNOWLEDGE	1	AGRICULTURAL MECHANICS	1.67
		2	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.33
		3	SOIL AND SOIL MANAGEMENT	1.18
		4	ANIMAL SCIENCE	1.08
		5	FARM BUSINESS MANAGEMENT AND MARKETING	.48
		6	PLANT SCIENCE	.07
	SKILLS	1	AGRICULTURAL MECHANICS	1.89
		2	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.71
		3	PLANT SCIENCE	1.13
		4	ANIMAL SCIENCE	1.07
		5	SOIL AND SOIL MANAGEMENT	.33
		6	FARM BUSINESS MANAGEMENT AND MARKETING	.0

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
OTHER CROP PRODUCER	KNOWLEDGE	1	AGRICULTURAL MECHANICS	1.81
		2	PLANT SCIENCE	1.48
		3	SOIL AND SOIL MANAGEMENT	1.45
		4	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	.92
		5	FARM BUSINESS MANAGEMENT AND MARKETING	.90
		6	ANIMAL SCIENCE	.44
	SKILLS	1	AGRICULTURAL MECHANICS	1.84
		2	SOIL AND SOIL MANAGEMENT	1.56
		3	PLANT SCIENCE	1.48
		4	FARM BUSINESS MANAGEMENT AND MARKETING	1.33
		5	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.11
		6	ANIMAL SCIENCE	.38

JOB TITLE		RANK	SUBJECT MATTER AREAS	INDEX
GENERAL FARM WORKER	KNOWLEDGE	1	SOIL AND SOIL MANAGEMENT	1.55
		2	FARMSTEAD, BUILDINGS, FENCES, AND WATHER SYSTEM	1.05
		3	PLANT SCIENCE	.97
		4	AGRICULTURAL MECHANICS	.97
		5	ANIMAL SCIENCE	.87
		6	FARM BUSINESS MANAGEMENT AND MARKETING	.60
	SKILLS	1	SOIL AND SOIL MANAGEMENT	1.48
		2	PLANT SCIENCE	1.12
		3	FARMSTEAD, BUILDINGS, FENCES, AND WATER SYSTEM	1.06
		4	AGRICULTURAL MECHANICS	.87
		5	ANIMAL SCIENCE	.85
		6	FARM BUSINESS MANAGEMENT AND MARKETING	.69